

## Participatory Design Approach with Teenagers to Social Media Design

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### **Abstract**

*Teenagers' lives and experiences have been prominently influenced by social media, which encourages some values (while forbidding others) and offers a fresh way to engage with others. Nevertheless, teenagers are rarely engaged in the creation and growth of popular social media, however, because their human characteristics are not taken into account. Therefore, the primary objective of this study is to capture significant factors of human characteristics by employing teenagers to cooperatively design a new social media application. We ensure that by actively participating and involving teenagers in design activities, we can recognize their thoughts, emotions, and behaviors as the human characteristics towards social media use. Giving participants access to design components or creative materials allows them to construct their ideal experience in a manner that clearly communicates what is important to them and why. This process is identified as participatory design. During participatory design session, the teenagers will be experiencing selected processes such as brainstorming, responding to various scenarios, and developing prototype to extract insights in the forms of factors of HCI for teenagers and design preferences. Paper prototyping technique is the most appropriate participatory design tool used as it requires no technical skills, easy and fast to develop.*

**Keywords:** Participatory Design, Paper Prototyping, Social Media, Teenagers, Prototype, Human Characteristics

### **INTRODUCTION**

Teenagers and social media cannot be separated. Teenagers' lives and experiences have been prominently influenced by social media, which encourages some values (while forbidding others) and offers a fresh way to engage with others. Teenagers use social media in most of their activities. It is extensively used in academic (Taukobong, Eytayo, & Gopolang, 2022; Suprato, 2020; Dennen et al., 2019), entertainment and personal life (Shah, Chen, Sonnert, & Sadler, 2023; Corvite, Zhang, & Haimson, 2022; Saha, et al., 2021), and news and current events (Rocheleau & Chiasson, 2022; Goray & Schoenebeck, 2022; Charmaraman & Delcourt, 2021). Thus, most teenagers believe social media brings essential technology in their life (Rosenberg, Ophir, & Billig, 2021). Meanwhile, a recent encounter has exposed that entirely 95% of United States of America's teenagers own a smartphone or have access to it (Anderson & Jiang, 2018). Specifically for Malaysian perspective, the Internet user at the range of age between five to seventeen years old has fully-fledged more than 50% since 2018 (Malaysian Communications and Multimedia Commission, 2020). In the same report, Facebook, YouTube, and Instagram has been listed by MCMC as the most retrieved social media platforms. While, WhatsApp, Facebook Messenger, and Telegram has been declared as most users' communication apps.

Teenagers' involvement in interaction design requires a specialized, classified, and unique study that make them unlike from study with children and adults. Teenagers are a group of users that categorized under a less-discovered region because of least attention and a small number of research in this emerging discipline (Björling, Rose, Davidson, Ren, & Wong, 2019; Fitton & Bell, 2014; Fitton, et al., 2014). In fact, teenagers able to offer a wide dimension in technology design and development when engaging with a mixture of children's creative minds with adults' articulacy. In addition, teenagers have also created a huge lucrative technology market share due to their population and their emerging spending power. As example, teenagers in the United States of America spending trend accounted for billions of dollars yearly (Fitton & Bell, 2014; Zimmerman, et al., 2016). They are active users of technology and can be both challenging and pleasing to work with because they would rather be working with teen-centric events and linguistic, but avoiding structural authorities conduct (Little et al., 2013). They too, demand special attention and concentrated research field so that they can be known as the testing ground for the pioneering technologies (Dhir & Al-kahtani, 2013).

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Human-Computer Interaction (HCI) for teenagers is considered as important, just like Child-Computer Interaction (CCI). From the psychological and psychosocial views, teenagers are not in common with adults and children in terms of their way of thinking, feeling, and acting. Hence, efforts should be directed towards learning teenagers inside these fields of computer interaction and user experience (UX) to notify the technological design process without disregarding them as technology users. The deployment of HCI for teenagers is expected to deliver an applicable direction for teenagers' computer interaction design and development. Hence, this study identifies and analyses teenagers' factors on social media according to their thinking, feeling, and action, to reveal valuable insights.

## LITERATURE REVIEW

### Social Media Design with Teenagers

Researchers Price (2018), Schwär and Moynihan (2020), Fang (2020), and Anderson (2018) have found that social media is designed to cause "the dopamine effect," or obsession. Technology companies developed strategies to encourage people to use technology in the setting of the growth of social media. (Saura et al., 2021). It's best if more people use technology because it will increase their ability to make money. (Boddy & Dominelli, 2017). According to Saura et al. (2021), social media aims to change user behavior in order to boost sales. Furthermore, social media platforms try to increase user involvement to generate more data, according to Carlson, Rahman, Voola, and De Vries (2018). This poses ethical and security questions. All of these issues, in addition to numerous others, including those involving mental health and melancholy, harassment, and sexual grooming, to name a few, raise doubts about young people's substantial exposure to and use of social media.

The creation and development of well-known social media platforms like Instagram, Tik Tok, Facebook, etc. that might fix or at least lessen some of the disagreeable issues are currently rare, as is the serious consideration of teenagers' needs and requirements. It's possible that by making inferences from them, designers will be able to create social media platforms that not only continue to draw users but are also thoughtfully built for their ease and security in both their engagement and behavior.

Fitton et al. (2013) suggested a unique interaction design approach specifically for adolescents because they didn't believe that the current HCI and CCI were completely relevant to or meeting teenagers' needs. Teenagers are known for their complexity and diversity in HCI study, which necessitate thorough investigation. (Bell, 2016). Teenagers will soon become adults, and it is possible to gain useful interactive insights to develop future technical breakthroughs. Although HCI for teenagers is still new and understudied, CCI has been debated for almost 50 years, so newcomers to the general HCI community may be acquainted with the idea and all of its foundations (Hourcade, 2015). Without a question, more research and writing are required to support HCI for teenagers' status as one of the major issues in technology design. The creation of a conceptual framework and approach is urged by Bell and Davis (2016) in order to value this age group on par with HCI and CCI. This study can lay out a precise route for achieving common objectives in interaction design, computer interaction in general, and the development of HCI for teenagers.

### Participatory Design

When compared to other methods that do not require users to be actively involved throughout the data collection process, participatory design has the potential to uncover significant insights that would otherwise go unnoticed. Teenagers are constantly involved in the technology creation and development process. The best option for speeding the design and development process while utilizing participative design is a paper prototype because it is quick, inexpensive, and allows for a quick recovery if errors are made or met during the design.

Participatory design is a body of ideas, exercises, and research that promotes full user participation in tasks that result in computer-based activities and the development of computer hardware and software. (Muller & Druin, 2007). A new theory of knowledge representation and system designs that clearly differentiate between a system's conceptual model and implementation model are the roots of participatory design (Sjöberg & Timpka, 1998). When technology starts to be used more frequently in everyday life, researchers and designers need to come up with strategies for creating for interaction between people and things. Work by Azenkot et al. (2016), Frederiks et al. (2019), and Rose and Björling are some examples of this. (2017).

Giving participants access to design elements or artistic items allows them to craft their ideal experience in a decisive way that expresses what is truly important to them and why. In order to gain information on particular aspects of HCI for teenagers and design choices for this project, participants in participatory design workshops will go through a number of specific processes, including observation, scenarios, and prototypes.

## **Paper Prototyping**

Making user interfaces on paper is a helpful method for software, websites, and online applications. (Snyder, 2001, 2003). These workplace items—blank papers, index cards, marker markers, shears, paper cutter blades, transparencies, and glue sticks—are frequently used to replicate system design. Anyone of any age or background can use this well-liked method because it doesn't require any technical knowledge. This is beneficial because there is currently no need to write any computer code.

Paper prototyping can provide precise customer feedback during the early phases of development, and the procedure can be replicated to produce original ideas for the prototype. For example, Musthafa et al. (2019) used paper prototyping to create applications for users with physical disabilities, Boyd et al. (2019) used it to create applications for kids with neurotypical, ADHD, and autism spectrum disorders, Hammami et al. (2020) combined paper and video-based prototypes, and Rueda et al. (2020) used it to elicit functional requirements from their participants.

## **METHODOLOGY**

This section offers a comprehensive description of the methods used to conduct this research, from selecting participants meticulously while considering Covid-19 limitations to organizing, creating, and executing the participatory design to conducting the analysis.

### **Participants**

Participants in this research are teenagers between the ages of 17 and 19 who are enrolled in secondary schools and colleges of higher learning. Due to Covid-19 and several restrictions imposed by the government, convenient sampling is used to select and collect the participants, exactly adhering to the general standard operating procedure (SOP) during the pandemic. Thus, 26 participants participated in this research, 19 of whom were between the ages of 18 and 19 and 7 of whom were aged 17 or younger. Twelve female competitors and fourteen male individuals made up the gender split.

### **Participatory Design Sessions**

Three participatory design sessions were separately conducted because the participants hailed from different academic schools and places. Nine volunteers from a higher education college participated, and seventeen people were selected from different secondary institutions. Each participant freely consented to participate in the research by submitting a letter of participation. The videotaping of the prototype activities and the fact that the data was only gathered for this project were both made known to all participants. These young people asked a lot of questions, so the academics assumed the position of guide. The actions of each session are described in depth below, with a summary of those activities appearing in Table 1.

**Table 1** The detail of each session in the participatory design

Session 1	Session 2
Research Objective briefing	Testing
Participatory Design Introductory	Discussion and reflection
Paper Prototyping Introductory	Refining prototype
Paper Prototyping development	

### Session 1

The subjects were informed of the study's objectives, the results anticipated at the end of each session, and the kinds of activities they would engage in. Five main topics were emphasized in the first class, including the following:

- i) *The background of Participatory Design and Paper Prototyping:* The students were given explanations of the background of collaborative design and the paper prototyping technique. The students were all new with the technique and technology, so the researchers used clear descriptions and plain English to help them understand how paper prototyping is related to participatory design. The students were also informed that they were adopting the part of designers charged with creating the appearance of a fresh social networking site for teenagers. Instead, they acted as end consumers, responding to questions and adding commentary.
- ii) *The session involved hands-on activities and interactive:* It was told to the pupils that they would be learning this prototyping technique through direct synthesis of the prototype. The researcher, as previously stated, would act as their facilitator by urging the students to expose their ingenuity and identify variables of thinking, feeling, and action in order to envision the design of a new social media platform in the form of a paper mock-up. The creation of ideas and recommendations for the design using the paper prototype method is a biased process, so there is no right or wrong way to go about it.
- iii) *Roles of each participant:* All students were expected to collaborate in order to build the prototype rather than replying to the researchers' probing inquiries as they surfaced along the way.
- iv) *Materials for paper prototyping development:* The students were explained how stationery was used to create the prototype. The researchers fully guided the students by giving them samples of the constructed interface. By looking at the example, the students quickly learned how to use the provided stationery to make the required sample.
- v) *The advantages of paper prototyping:* In the first briefing, the researchers talked about the importance and advantages of using both the participatory design method and paper prototyping tools when creating interface design activities to pinpoint teenagers' reasoning, feeling, and action components. This was done to persuade the students to completely support and participate in the activities being conducted.

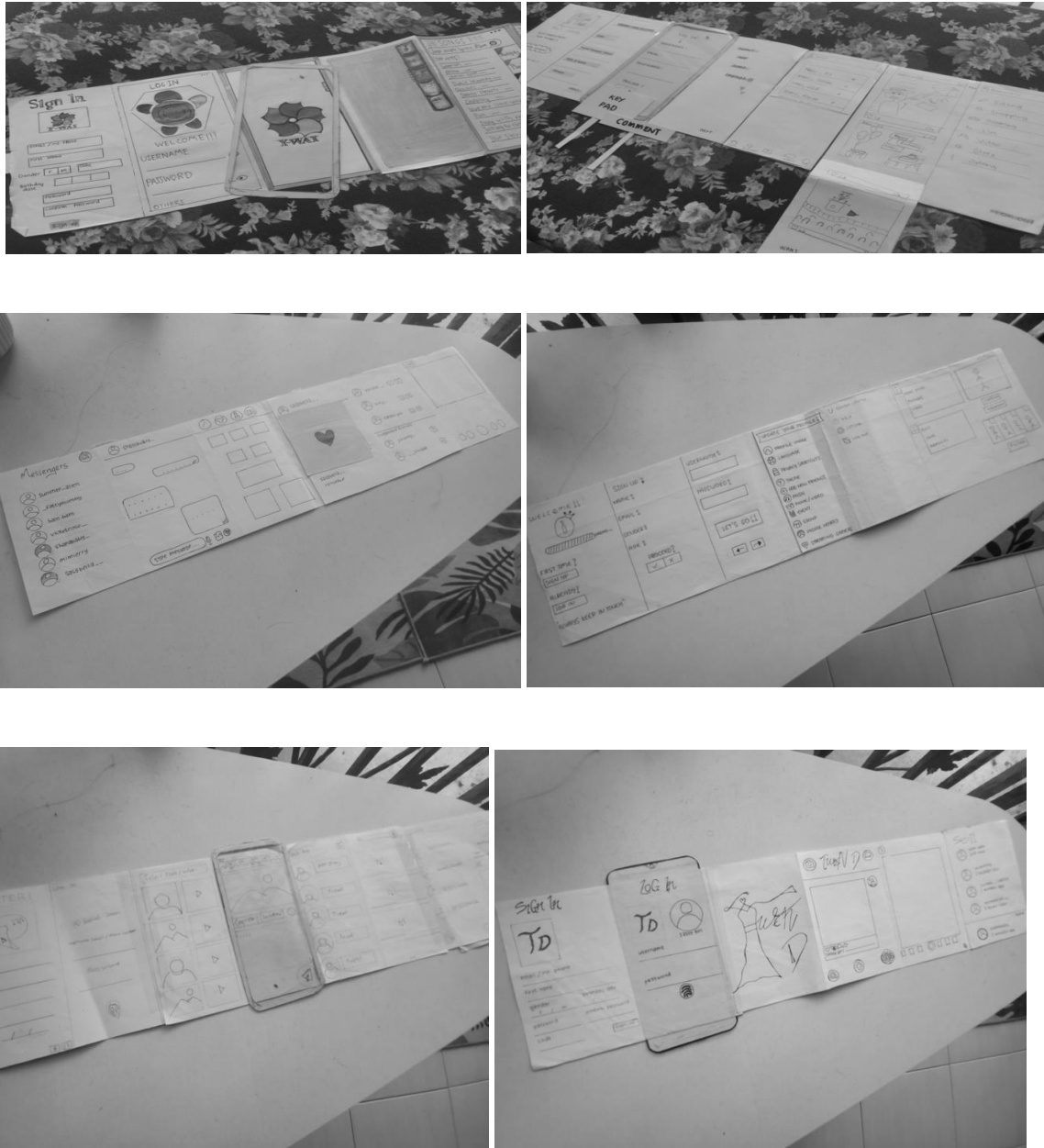
### Session 2

A test was conducted to determine whether the researchers had successfully incorporated the thinking, feeling, and action elements into the UI design and to determine whether all of the tasks had been accomplished after the users and the researchers had collaborated to create a prototype of their new social media platform. Two students were asked to participate as users, with one student cast as the machine. The remainder were told to act as observers. Throughout the trials, the researchers acted as a guide and asked questions about the goals and features of the new social media platform. In-depth responses from the students to challenging questions imply that more precise insights may be discovered. Figure 1 depicts paper prototyping activities with teenager participants in different setups and sessions. The activities were participated by groups of students from college, pre-university and secondary schools whose came from different locality, family background and ethnics. Figure 2 illustrates paper prototypes which successfully designed by participants that derived from theirs' thoughts, emotions, and behaviours.

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**Figure 1:** Sessions conducted with participants



**Figure 2:** Some prototypes ideated from the paper prototyping sessions

### Method for Analysis

The two main kinds of data that emerged from the meetings were prototypes of new social media and movies that were filmed. The videos of the prototyping activities were turned into helpful paperwork by using all of the newly developed social media prototypes as a reference. Then, using analysis of these papers, the factors for social media based on teenagers' thoughts, feeling, and behavior were discovered. The written transcriptions of the movies were done by hand, and they were saved as document-typed files. The titles for the documents included information about the student classes, member numbers, and video characteristics like file names, sizes, and durations. The study was carried out using *Atlas.ti*, a Computer-Aided Qualitative Data Study Software (CAQDAS). All of the transcription papers were received by the software, which then prepared them for coding. By giving a label to the data segment and explaining what it was about, a word, phrase, sentence, or even a passage was coded (as shown in Figure 3). Then, networks were used to display the connections between

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the variables. The particular variables were combined and made generic in this study's inductive methodology in order to identify the elements of thinking, emotion, and action that were sought after.

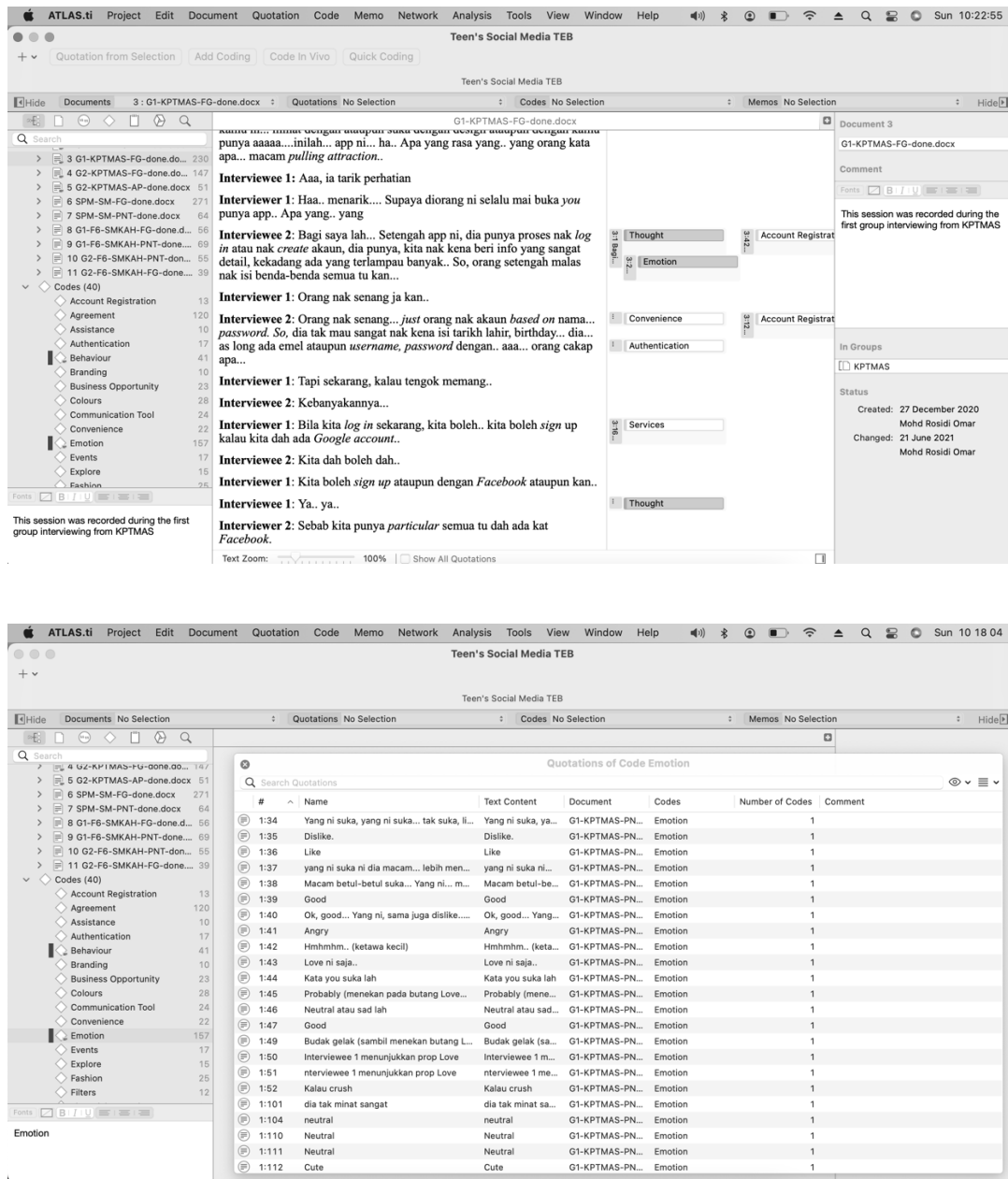


Figure 3: Process of coding the themes using *Atlas.ti*

## OUTCOMES AND DISCUSSION

The previous coding method generated 66 codes. These individual codes were then classified into three broad categories: human characteristics, social media characteristics, and teenagers' interests. The broad groups were formed based on a shared understanding of what the codes represented. Aside from that, *Atlas.ti* was able to track the number of times each of the codes were referenced or referred to during all discussions concerning this study (including prototyping sessions, interviews, and presentations). The number of occurrences or mentions of codes ranged from 1 to 157. FEELING had the most occurrences or mentions, while GADGET,

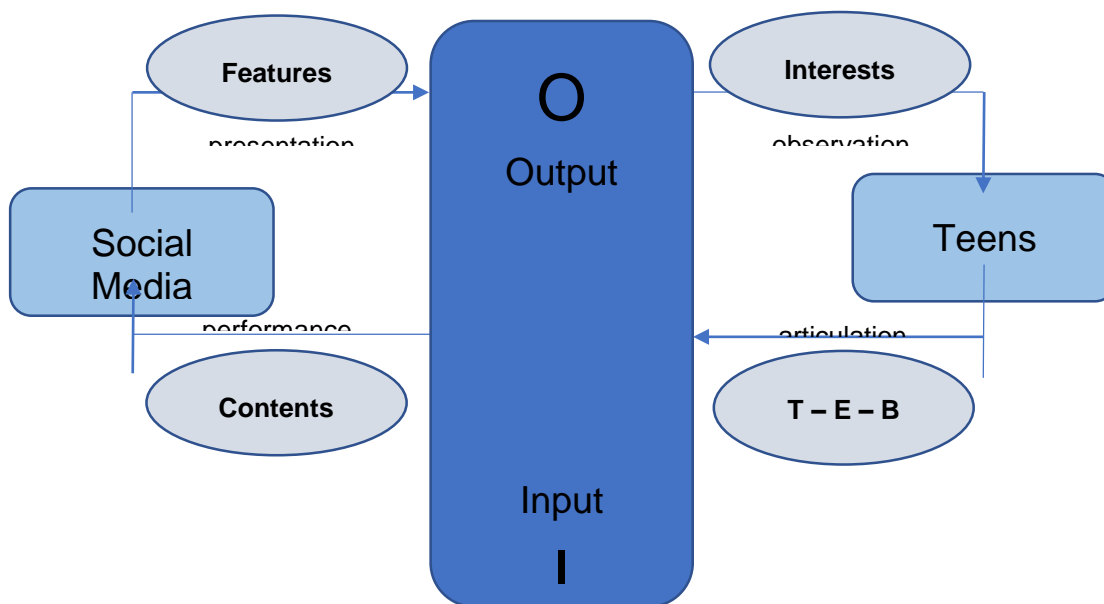
QUOTES, and TOURISM had the fewest. There were further twenty-three codes that appeared or were referenced fewer than ten times and were thus omitted from the list of factors. The exclusion was designed to ensure that only important variables in social media design for adolescents were examined. After excluding non-important elements, forty criteria were explored in developing an HCI framework for teenager use of social media. Using thematic analysis, these elements were organised into four themes: T-E-B, CONTENTS, FEATURES, and INTERESTS. Table 2 demonstrates how the components were grouped together based on their common themes.

**Table 2 Themes of the prominent factors (sorted based on number of occurrences from highest to lowest)**

T-E-B	CONTENTS	FEATURES	INTERESTS
Feeling	Postings	Services	Social Media Applications
Agreement	Selection	Colours	Videos
Thinking	Convenience	Communication Tools	Music
Habit	Live Streaming	Security	Games
Language	Account Registration	Specialty	Photos
		Targeted User	Fashion
		Authentication	Business Opportunity
		Privacy Measures	Making Friends
		Multi-programming	Influencer
		Filters	Financial Rewards
		Views	Events
		Multi-tasking	Likes
		Branding	Followers
		Variability	Movies
		Assistance	Explore

These found elements were then depicted in the form of a functioning framework, which was meant to serve as a reference for social media design for teenagers. The framework (shown in Figure 4) was inspired by Abowd and Beale's interaction framework, in which the four translation origins; observation, articulation, performance, and presentation were adapted to the factor's themes of interests, T-E-B, contents, and features.

The HCI framework for teens in social media is founded on two fundamental roles: the teenagers themselves and social media as the primary focus of today's teenagers. Teenagers have a diverse set of interests; according to the data gathered, the five most popular teenage pastimes are social networking applications, movies, music, games, and photos.



**Figure 4:** The HCI Framework for Teens in social media



Explaining observed interests in the framework is in the form of applications, multimedia components, trends, and/or activities that Aamir (2018) defined as one of the teens' favourite activities. As demonstrated in Table 2 under the INTERESTS heading, social media programmes provide content that teens desire to see and that meets their expectations. As so-called digital natives, teenagers are well-known for their articulate embrace of technology. They generate social media posts based on what they think, feel, and do. For this study, think, feel, and act are synonymous with thinking, emotion, and behaviour, or T-E-B. T-E-B's human traits become the sources of content production, which include ideas derived from mental processes, emotions over the circumstance, and actions towards the event.

The creation of content for social media does not always follow the appearance of thought-emotion-behavior; it may be in the order of emotion-behavior-thought or behavior-thought-emotion where the contents can be created from the visualization of ideas, emotions reflections, or behaviours reactions. The materials made by teens as part of their performance add to the input of social media; an estimated five billion snaps everyday! (Snap Inc., 2021). Among the main aspects of social media are 'always-available' services, prismatic and bright hues, and connection to other people for conversation. These qualities are regarded the product of social media to display the intriguing appearances, multi-functions, and entertaining applications.

## **CONCLUSIONS**

Most notably, this research highlights the importance of involving teenagers in the design and development of social media platforms through participatory design. The researchers emphasize that adolescents' lives and experiences are strongly influenced by social networks and it is crucial to consider their unique human characteristics in the design process. By actively involving teenagers in design activities and using paper prototypes as a participatory design tool, valuable information can be gained about the factors of human-computer interaction (HCI) and design preferences of teenagers.

The research points out that social media platforms are predominantly designed to encourage user engagement and generate profits, often neglecting the specific needs and safety of teenagers. The creation of well-designed social media platforms that address the concerns and requirements of teenagers is still limited. Therefore, the study proposes involving teenagers in the design process to create social media platforms that not only attract users but also prioritize their ease and security in engagement and behavior.

The research also emphasizes the importance of HCI for teenagers, as they have distinct ways of thinking, feeling, and acting compared to adults and children. Recognizing these differences is essential for creating effective technological designs and user experiences that cater to teenagers' needs. The deployment of HCI for teenagers is seen as a way to inform the technological design process and ensure that teenagers are not disregarded as mere technology users.

Participatory design is presented as a valuable approach to involve teenagers actively in the design process. It allows for the uncovering of significant insights that might otherwise be overlooked. Paper prototyping is highlighted as a suitable participatory design tool due to its simplicity, cost-effectiveness, and accessibility to individuals with no technical skills. The research suggests that participatory design sessions involving teenagers can include activities such as brainstorming, responding to scenarios, and developing paper prototypes to extract valuable insights into HCI factors for teenagers and their design preferences.

The researchers conducted three separate design sessions with teenagers from different educational institutions, ensuring that Covid-19 limitations and safety measures were followed, since the sessions were conducted during pandemic period. Through the sessions, the participants actively engaged in the creation of paper prototypes for a new social media platform. The data collected from these sessions, including prototypes and videos, were analysed to identify factors of social media based on teenagers' thoughts, feelings, and behaviours.

In summary, this research emphasizes the importance of involving teenagers in the design of social media platforms and highlights the benefits of participatory design and paper prototyping as methods for understanding teenagers' perspectives and preferences. By considering teenagers' human characteristics and

actively involving them in the design process, it is possible to create social media platforms that better cater to their needs and provide a safer and more engaging user experience.

## REFERENCES

- Aamir, T. (2018). Social Media, Moralities and Teenagers: To analyse the Effects of Social Media on Teenagers. *Muslim Perspectives*, 3(4), 69 - 87.
- Anderson, H. (2018). Social media apps are 'deliberately' addictive to users. <https://www.bbc.com/news/technology-44640959>.
- Anderson, M., & Jiang, J. (2018, May 31). Teens, Social Media & Technology 2018. Retrieved October 31, 2018, from Pew Research Center: Internet and Technology: <http://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018/>.
- Azenkot, S., Feng, C., & Cakmak, M. (2016). Enabling Building Service Robots to Guide Blind People: A Participatory Design Approach. 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI) (pp. 3-10). Christchurch: IEEE.
- Bell, B. T. (2016). Understanding Adolescents. In L. Little, D. Fitton, B. T. Bell, & N. Toth, *Perspective on HCI Research with Teenagers* (pp. 11-27). York: Springer International Publishing.
- Bell, A., & Davis, K. (2016). Learning through Participatory Design: Designing Digital Badges for and with Teens. IDC '16 (pp. 218-229). Manchester: ACM.
- Björling, E. A., Rose, E., Davidson, A., Ren, R., & Wong, D. (2019, March 14). Can We Keep Him Forever? Teens' Engagement and Desire for Emotional Connection with a Social Robot. *International Journal of Social Robotics*, 12, 65-77. DOI 10.1007/s12369-019-00539-6.
- Boddy, J., & Dominelli, L. (2017). Social media and social work: The challenges of a new ethical space. *Australian Social Work*, 70(2), 172–184. <https://doi.org/10.1080/0312407x.2016.1224907>.
- Boyd, L., Wasserman, B., Hayes, G., Day, K., Abdo, K., & Linstead, E. (2019). Paper Prototyping Comfortable VR Play for Diverse Sensory Needs. CHI'19 (pp. LBW1714, Page 1-6). Glasgow: ACM.
- Carlson, J., Rahman, M., Voola, R., & De Vries, N. (2018). Customer engagement behaviours in social media: Capturing innovation opportunities. *Journal of Services Marketing*, 32(1), 83–94. <https://doi.org/10.1108/jsm-02-2017-0059>.
- Charmaraman, L., & Delcourt, C. G. (2021). Prototyping for SocialWellbeing with Early Social Media Users. CHI '21 (pp. 1-5). Yokohama: ACM.
- Corvite, S., Zhang, B., & Haimson, O. L. (2022). Social Media's Role During Identity Changes Related to Major Life Events. CSCW2 (pp. 1-22). ACM.
- Dennen, V. P., Rutledge, S. A., & Bagdy, L. M. (2019). Social Media Use in High School Settings: Rules, Outcomes, and Educational Opportunities. *SMociety '19* (pp. 205-213). Toronto: ACM.
- Dhir, A., & Al-kahtani, M. (2013). Ubiquitous Computing for Teenagers : A new Perspective on Child-Computer Interaction. 2013 IEEE International Symposium on Technology and Science (ISTAS) (pp. 126-135). Toronto: IEEE.
- Fang, R. (2020). The psychology of why social media is so addictive. <https://uxdesign.cc/the-psychology-of-why-social-media-is-so-addictive-67830266657d>.
- Fitton, D., & Bell, B. (2014). Working with teenagers within HCI research: Understanding Teen-Computer Interaction. *HCI 2014* (pp. 201-206). Southport: BCS Learning and Development Ltd.
- Fitton, D., Bell, B., Read, J. C., Iversen, O., Little, L., & Horton, M. (2014). Understanding Teen UX: Building a Bridge to the Future. *CHI 2014* (pp. 79-82). Toronto: ACM.
- Fitton, D., MacKenzie, I. S., Read, J. C., & Horton, M. (2013). Exploring Tilt-Based Text Input For Mobile Devices With Teenagers. *Proceedings of the 27th International BCS Human Computer Interaction Conference* (pp. 1-6). London: BCS Learning & Development Ltd.
- Frederiks, A. D., Octavia, J. R., Vandeveld, C., & Saldien, J. (2019). Towards Participatory Design of Social Robots. *INTERACT 2019* (pp. 527-535). Paphos: Springer.
- Goray, C., & Schoenebeck, S. (2022). Youths' Perceptions of Data Collection in Online Advertising and Social Media. *CSCW2* (pp. 1-27). ACM.
- Hammami, H., Camara, F., Calvary, G., Riahi, M., & Moussa, F. (2020). The Benefits of Combining Paper- and Video-Based Prototypes for User Interface Evaluation. *ACHI 2020: The Thirteenth International Conference on Advances in Computer-Human Interactions* (pp. 193-198). Valencia: IARIA.
- Hourcade, J. P. (2015). *Child-Computer Interaction*. Iowa: CreateSpace Independent Publishing Platform.
- Little, L., Bell, B., Defeyter, G., Read, J. C., Fitton, D., & Horton, M. (2013). Behaviour changes interventions: Teenagers, technology, and design. *IDC 2013* (pp. 610-612). New York: ACM.
- Malaysian Communications and Multimedia Commission. (2020). *Internet Users Survey 2020*. Cyberjaya: Malaysian Communications and Multimedia Commission.
- Muller, M. J., & Druin, A. (2007). Participatory Design: The Third Space in HCI. In M. J. Muller, *Hybridity and Participatory Design* (pp. 1-70). Cambridge: IBM Research.
- Musthafa, N., Sulaiman, S., & Ab Aziz, N. (2019, December 31). Customizing Interface Design for Users with Impairment using a Paper Prototyping. *PLATFORM - A Journal of Science & Technology*, 2(2), 33-39.

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- Price, C. (2018). Trapped – the secret ways social media is built to be addictive (and what you can do to fight back). <https://www.sciencefocus.com/future-technology/trapped-the-secret-ways-social-media-is-built-to-be-addictive-and-what-you-can-do-to-fight-back/>.
- Rose, E. J., & Björling, E. A. (2017). Designing for engagement: Using participatory design to develop a social robot to measure teen stress. SIGDOC '17 (pp. 1-10). Halifax: ACM.
- Rueda, S., Panach, J. I., & Distanto, D. (2020). Requirements elicitation methods based on interviews in comparison: A family of experiments. *Information and Software Technology*, Article 106351: 1-19.
- Rocheleau, J. N., & Chiasson, S. (2022). Privacy and Safety on Social Networking Sites: Autistic and Non-Autistic Teenagers' Attitudes and Behaviors. *ACM Transactions on Computer-Human Interaction*, 1-39.
- Rosenberg, H., Ophir, Y., & Billig, M. (2021). OMG, R U OK? Therapeutic Relationships between Caregivers and Youth at Risk on Social Media. *Children and Youth Services Review*, 120, 1-11.
- Saha, K., Aledavood, T., Grover, T., Seybolt, J., Konjeti, C., Mark, G., . . . De Choudhury, M. (2021). What Life Events are Disclosed on Social Media, How, When, and By Whom? CHI '21 (pp. 1-22). Yokohama: ACM.
- Saura, J. R., Palacios-Marqués, D., & Iturricha-Fernández, A. (2021). Ethical design in social media: Assessing the main performance measurements of user online behavior modification. *Journal of Business Research*, 129, 271-281. <https://doi.org/10.1016/j.jbusres.2021.03.001>.
- Schwär, H., & Moynihan, Q. (2020). Instagram and Facebook are intentionally conditioning you to treat your phone like a drug. <https://www.businessinsider.com/facebook-has-been-deliberately-designed-to-mimic-addictive-painkillers-2018-12>.
- Shah, Z., Chen, C., Sonnert, G., & Sadler, P. M. (2023). High School Computer Gameplay and Social Media Use: Influence on CS Identity and CS Career Interests in College. SIGCSE 2023 (p. 1347). Toronto: ACM.
- Sjöberg, C., & Timpka, T. (1998). Participatory Design of Information Systems in Health Care. *Journal of the American Medical Informatics Association*, 177-183.
- Snap Inc. (2021, February). Investor Presentation.
- Snyder, C. (2001, November 1). Paper Prototyping. Retrieved from IBM: <http://dwmaster.raleigh.ibm.com/dwcontent/developerworks/library/library-html/us-paper/index.html>.
- Snyder, C. (2003). *Paper Prototyping: The Fast and Easy Way to Define and Refine User Interfaces*. San Francisco: Morgan Kaufmann Publishers.
- Suprato, D. (2020). Maximizing Social Media Application for Students in Learning English. ICLIQE 2020 (pp. 1-4). Surakarta: ACM.
- Taukobong, T., Eyitayo, O. T., & Gopolang, B. (2022). Social Media Usage Amongst University of Botswana First Year Undergraduate Students. ACIT2022 (pp. 6-11). Virtual Event: ACM.
- Zimmerman, J., Forlizzi, J., Finkenaue, J., Amick, S., Ahn, J., Era, N., et al. (2016). Teens, Parents, and Financial Literacy. DIS 2016 Proceedings of the 2016 ACM Conference on Designing Interactive Systems (pp. 312-322). Brisbane: ACM.