Improving Child Data Awareness

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This report outlines and explains a system designed to improve data awareness amongst children in order to promote online safety and autonomy. Currently, parents and children are unaware of how their online information may be used, how it can impact their future and the associated consequences [1]. The lack of transparent data management on websites can exacerbate this situation, highlighting the need for a user-friendly system.

The proposed solution involves a built-in educational tool for operating systems. This report conveys iOS solutions aimed at ages 7-11 but can be equally applicable to alternative operating systems and other demographic groups with slight adjustments. The 7-11 age bracket was selected to allow this tool to be implemented in the Key Stage 2 ICT curriculum. The main features include:

1. A personalised interface to capture user attention and increase engagement.
2. Distinct animations to indicate when personal, locational or 'behavioural' data is given away, and to whom.
3. An optional guided overlay to indicate how to delete all personal data and disable data sharing to listed recipients.

The tool aims to act as an instructive intervention, educating and highlighting the importance of data awareness without restricting online activity. Instructive mediation is the favoured method as research indicates that autonomy-supportive parental action is preferable over control-based action in the context of data awareness. Instructive mediation has also been shown to have a negative correlation with disclosure of data as well as intent to disclose information [2]. Consequently, the system aims to use distinct visual cues to immediately alert and inform when sharing important data. Furthermore, offering non-prescriptive instruction on setting changes increases autonomy and empowerment in children.

Visually engaging interventions may succeed in alerting children to harmful online situations, including those that are subtle or disguised. While children may know how to respond in risky situations, they may be less skilled at identifying risks from the outset [3]. Timely and tailored visual cues will enable quick and effective user action.

FEATURE I: PERSONALISED INTERFACE

Research indicates that children learn more effectively by means of self-regulated symbolic playing [4], justifying the development of a symbol driven product. Given the prevalence of emojis and animojis in children's digital play and communication, using such features enables familiarity, engagement and understanding [5]. Although research shows that children link colours with emotions [6], using a predefined colour coding system cannot in isolation guarantee a full grasp of the product [7].

While step-by-step instruction is key to user understanding, customisation may motivate use and enhance navigation. Hence, children can customise the product during setup by choosing colours and animojis of their choice [Appendix. A]. Furthermore, research shows that a tailored digital environment creates a more comfortable, intuitive learning zone for children and may further increase their digital literacy [8].

FEATURE II: ANIMATION-LED

Child familiarity with emojis was used to indicate when they give away personal, locational or 'behavioural' data, as well the recipient(s). [Appendices. B, C, D]. Today, children have a technological fluency and competence which may precede linguistic, reading or writing abilities in certain cultures. While theories of learning were developed in an era when technology was sparse and children had little or no exposure to it, some of the principles of developmental theorists remain applicable. For instance, Piaget's concepts of schemas, assimilation and accommodation [9] are similarly valid concerning animated emojis. Familiar emojis should represent something real and tangible in a child's current schema, which are then assimilated to represent new and abstract concepts of data collection. This enables the child to develop a basic understanding, which is subsequently accommodated into an updated schema. Vygotsky introduced the pivotal concept of scaffolding relating to the role played by parents, teachers and others in the learning process [10]. In terms of Vygotsky's theory of scaffolding and that of mediation in Leontjev's Activity Theory [11], the notion that an animoji must already exist in the child's lexicon of knowledge/experience is a prerequisite for the efficacy of this tool. This minimises the semantic distance between the real-life object and its emoji representation, thereby enabling mediation and interpretation in the context of data collection.

FEATURE III: GUIDED OVERLAY

A swipe-up gesture reveals a task-bar, containing two graphical icons, depicting the concepts of privacy and data deletion [Appendix. E]. Each icon triggers an overlay on the current site, revealing a click-by-click guide through the site. The first icon signposts the site's privacy toggle, allowing the child to become aware of the often-complicated path to achieve this simple yet crucial task [Appendix. F]. The second icon signposts the site's button for the deletion of data from the company database. These overlays provide a simple and visual method of safe transit through websites, whilst minimising the change in the company's site design. The long-term goal is to allow the child to learn and practise the navigation of such routes, such that without guidance, they are better able and more intuitively adept at identifying the routes needed to toggle the relevant safety settings [12]. The overlay also notes the minimum number of clicks or taps required to carry out data deletion and privacy setting adjustments. This provides a clear metric for how complicated the process is and gives grounds for the ICO to intervene where a system is too complex.

FURTHER CONTEXT

The tool seeks to be in line with the guidelines laid out by the ICO. Primarily, this tool aims to increase accessibility and understanding by providing the child with step-by-step guides. It has the potential to be a valuable tool when introducing children to the abstract concept of data collection.

In order to be most effective, its use should be encouraged as part of the ICT curriculum within schools. Empowering children to take control of their data distribution will promote a culture of awareness and responsibility, which will not just benefit them as children but as adults too.

The proposed product will fit into children's digital education. Next steps will involve product validation with target users and implementing iterative improvements. Once a prototype has been developed, other demographic groups can be included.

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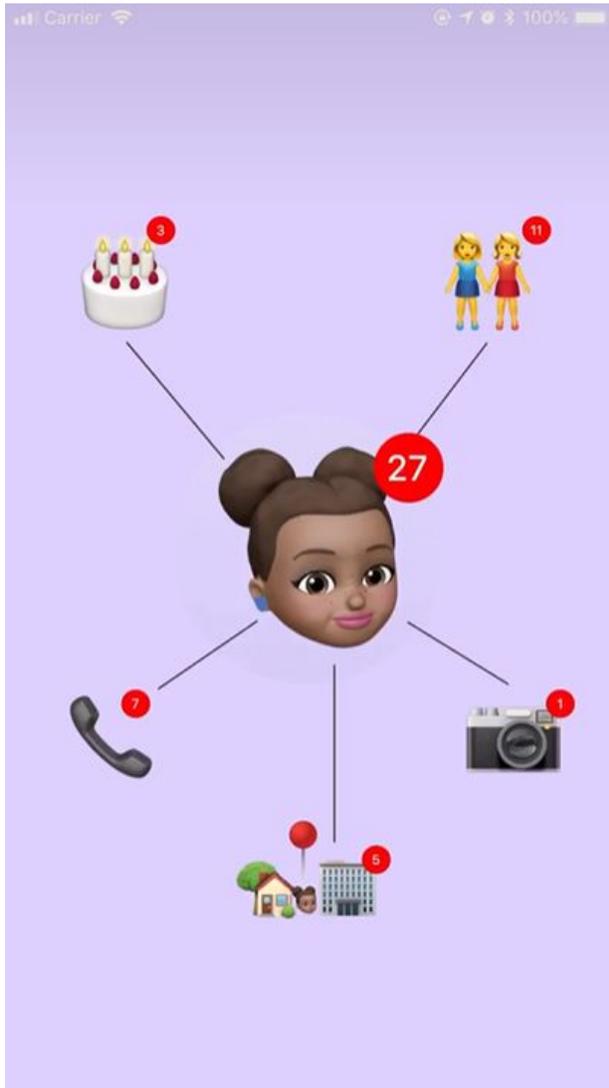
APPENDIX. A

APPENDIX. B

APPENDIX. C

APPENDIX. D

APPENDIX. E

APPENDIX. F