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People, Partnerships and Pedagogies

Using Figma to foster authentic digital learning experiences in an online short course

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Australia's healthcare landscape is undergoing a digital transformation that will improve health outcomes and enable better exchange of patient data. Australia's National Digital Health Strategy calls for a workforce that is educated to harness the potential of technologies that enable this digital transformation. There is an urgent need for effective and innovative methods of training the workforce to meet these demands. This paper discusses the development of an authentic learning activity using Figma, a popular UX/UI design tool. The activity sits within a short course, *Opportunities for SMART on FHIR apps*, which is a part of a national training programme, addressing workforce capacity-building needs. It teaches a non-technical healthcare workforce to create and share healthcare app prototypes with key stakeholders and developers. The activity highlights the importance of creating an authentic learning opportunity that builds the confidence of the workforce to enable digital health solutions, supporting healthcare's rapid digital transformation.

Keywords: Authentic learning, digital health, Figma, social learning, professional development

Introduction

The Australian healthcare system is undergoing a rapid digital transformation, with interoperability technology (enables disparate healthcare related systems to interconnect and exchange data) at the forefront (Australian Digital Health Agency, 2020; Hembelton et al., 2019). Compared to countries such as the United States, where regulation has driven their digital transformation (Reynolds, Kaligotla and Zheng, 2023), Australia has yet to fully embrace digital health technologies. As a result, we are unable to harness its full potential, which includes the development and adoption of a healthcare app ecosystem (both patient and clinician facing). The slow embrace of these technologies come at a significant cost to government budgets, disjointed and delayed care and poorer health outcomes (Sprivulis et al. 2007). Developing and sustaining a healthcare app marketplace, which takes full advantage of this digital transformation, requires a shift in thinking at all levels of the healthcare workforce, with government regulating and enforcing a shift in interoperability standards technology that is used to enable the exchange of data, and to develop the workforce capacity to deliver this change (Australian Digital Health Agency, 2020; Frean et al., 2023). To address the need to build workforce capacity, we have partnered with the Australian Digital Health Agency (ADHA), Health Level 7 (HL7) Australia and subject matter experts from CSIRO to deliver a national training programme of five short courses that each target a section of the diverse roles within the healthcare workforce (both technical and non-technical). The program achieves the priorities set out in the National Digital Health Strategy, including to enable the workforce to be confident in using digital health technologies to deliver health and care (Australian Digital Health Agency, 2020).

A key challenge in developing a widely used and sustainable healthcare app marketplace is effectively translating clinical problems into apps that offer valuable solutions. When the journey from problem to solution starts with early prototyping, the development of tangible artefacts, early-on in the project, can lead to enhanced engagement with stakeholders. By creating an early prototype, collaborators can surface key misassumptions about workflow or data requirements that may threaten the viability of a project. In essence, high quality prototypes support the creation of effective solutions that are actually created. In real-world scenarios, to get an early prototype created, projects require a User Experience/User Interface (UX/UI) designer who uses design tools such as Figma to communicate between clinical and development teams regarding the design. To develop a thriving Australian healthcare app marketplace, like those in the US and Europe, we need to better enable the partnership between the technical and non-technical healthcare workforce to collaborate and communicate both problems and solutions.

One of the five courses we developed, called *Opportunities for SMART on FHIR apps,* is aimed at a non-technical audience of clinical managers, clinicians and administrators of the healthcare workforce. In this

course, we discuss the potential of the technology and how a non-technical individual can translate the problems they experience at the coalface into healthcare apps that offer solutions. We seek to inspire confidence in clinicians and other non-technical participants to develop partnerships and communicate their proposed solutions with the decision makers and developers who are involved creating the solutions. We created an authentic learning activity that replicates how a healthcare organisation might conceive an app idea to solve a clinical problem and create a prototype to validate the same. We give participants an opportunity to create a tangible product that is valuable in its own right, not just part of the learning experience (Reeves, Herrington & Oliver, 2002). . Using Figma (a widely adopted prototyping and design tool), participants can create a functional app prototype without any code or technical know-how, using their real-world clinical problems and experience to inform their output (Toporski & Foley, 2004). In this work- in-progress paper we seek to answer the following questions:

- Given the choice, what percentage of participants elect to complete the high-fidelity track compared to the Quickstart track of the activity?
- What are the perceptions of learning, satisfaction and engagement for participants who completed the high-fidelity track compared to participants who completed the Quickstart track?
- For the participants who completed the high-fidelity track, what are their perceptions of the pitch activity and how will they apply the activity to their work and workplace?

Developing the activity (Methods)

The education workforce development team, which includes development leads, education specialists and a learning designer, leveraged our partnerships both in and outside our organisation to create an authentic learning activity where participants could design a prototype, collaborate and share their ideas with their diverse cohort. We partnered with the Centre for Digital Transformation of Health's Digital Health Validitron, which is an innovative hub for assisting real-world digital health solutions come to fruition. They specialise in the design, development, validation and evaluation of these new solutions. Using Figma, as the basis for our activity to realise our key outcomes.

The course structure includes a 4-hour self-paced online learning module in Canvas and a 1-hour interactive Zoom workshop. At the end of the self-paced module, participants create a 2-minute pitch for a SMART on FHIR app to be presented to their colleagues during the interactive workshop, during which they also engage with instructors providing expert feedback and insights on their pitches. To create these pitches participants can choose either a Quickstart track (using PowerPoint) or high-fidelity track (using Figma, described below) to share their pitch idea during the workshop. We provide participants with these two options giving them control over their learning experience (Bishop, 2006; Bonk & Khoo, 2014; Herbold, 2012) and to cater to the diversity in their time constraints. The high-fidelity track, while more time consuming, provides a richer more authentic experience for learners interested in understanding how to bring their ideas to life, using real-world tools.

Figma provides an innovative cloud-based solution enabling designers to ideate, design and collaborate directly with the developers involved in creating a new app project. It enables users to mock-up their design and link various elements creating a functioning app prototype that can be easily transitioned to the next step of the app development process (i.e. working with developers), while also making it easily shareable with decision makers. Figma is used widely within the UX/UI design community and within the Validitron's team, who provided their custom wireframe kit (the generic user interface controls included in the Validitron Wireframe Kit are modified versions of the *Wireframy* UI prototyping kit, used under a commercial license), which enabled us to supply participants with ready-made drag-and-drop design elements to integrate into their app designs.

In the activity description we include instructions on how to create a personal free Figma account, a video walkthrough tutorial of how to get started using Figma and several design resources including the Validitron's wireframe kit (Figure 1), links to a wireframe of the functional prototype example and other standard visual assets used in the development of apps to further inspire participants.

A key aspect of our partnership with the ADHA is to deliver on strategic priorities within the National Digital Health Strategy to educate the workforce to "be confident in using digital health technologies to deliver health and care." (Australian Digital Health Agency, 2020). For this first implementation, we have recruited a group of diverse workforce roles (N=30) from various state and federal government organisations, public and private healthcare organisations including hospitals, clinics and technology vendors involved in the development and management of electronic health record systems.

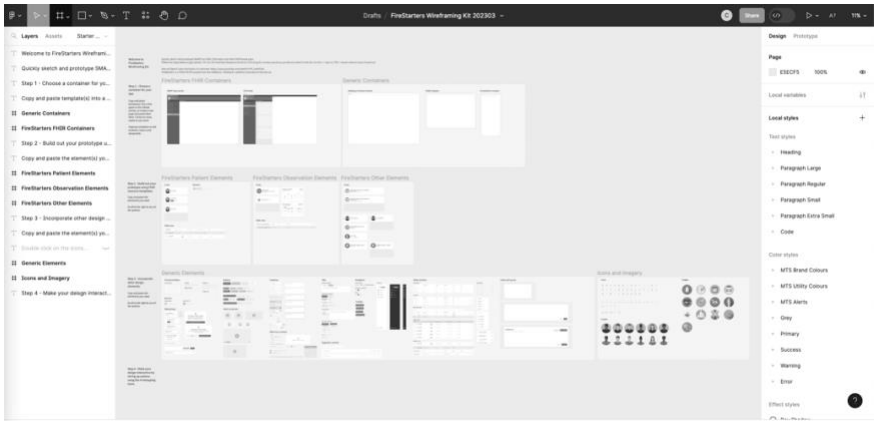

Figure 1: Wireframe kit provided by the Digital Health Validitron

Evaluation

The evaluation stage of this project is currently in progress. To answer our research questions, we will conduct surveys to evaluate participant's perceived satisfaction and engagement with the activity and the course overall, assess participant follow through in creating a solution in their work settings and will evaluate confidence with achieving learning outcomes, comparing responses from participants who completed the Quickstart track with those who completed the high-fidelity track to determine if adding Figma was more effective at achieving the intended outcomes. We will also include survey questions to compare the perceived ease of use and design complexity achieved between Figma and PowerPoint. We will interview consenting participants who completed the high-fidelity track to evaluate their perceptions of the activity and their plans to apply the activity to their workplace. We will use the Kirkpatrick Model of Evaluation to map out our measurements (Table 1). This model is the most widely used evaluation framework in education and is employed to shift researchers away from simply measuring perceptions and satisfaction.

Table 1. Application of the Kirkpatrick Model of Evaluation (amended by Barr et al. 2005) to this project

Level	Details	Evaluation measures and data sources in this project
1	Perception of training by subjects	Pre-, topic, and post-surveys
2a	Change of attitudes of subjects	Pre-, post-self-efficacy changes in specific concepts
2b	Change of knowledge and/or skills of subjects	Pre-, post-self-efficacy changes in specific concepts (to be followed up at the end of course, in one year with participant interviews)
3	Changes of behaviour of subjects	Topic, post-course surveys, post course participant interviews (to be followed up at the end of course, in one year with participant interviews)
4a	Change in professional practice	Post-course participant interviews (to be followed up at the end of course, in one year with participant interviews)
4b	Changes in patients' condition	Not applicable

Survey instruments - pre- and post-surveys were developed by using a combination of psychological scales and open-ended questions. The pre- and post-survey included the same self-efficacy scale (100 points; cannot do at all to highly certain can do) which has significant evidence of reliability and validity. We choose to evaluate self-efficacy as it is one of the strongest proxy measures in education to predict actual and future performance, which are more difficult and take longer to measure. The items on the self-efficacy scale were adapted from the material taught in the course and language from the literature (e.g., use design and development principles to create a wireframe for an SMART app). The open-ended questions include demographic questions and those related to our research questions. Surveys were designed and distributed via Qualtrics®. Participants will be invited to complete the surveys through emails and the Learning Management System. The self-efficacy scales will be analysed using a one tailed, matched, paired t-test, to determine whether there was an improvement in self-efficacy for the concepts.

Interviews - a 1-year follow up will be conducted via semi-structured interviews with participants who volunteer, to understand how participation in the course influenced their app ideas at their organisations. 30 min

interviews will be conducted via Zoom, and videos will be transcribed using Otter.ai. Transcripts will be coded and themed using Nvivo.

Feedback forms - over the course, participants have the opportunity to provide feedback on the level of engagement, usefulness, value, satisfaction and areas for improvement in the course content, through participation in feedback surveys. These surveys contain scales (strongly disagree to strongly agree) and ask questions like “how useful did you find this topic”; “how engaged did you feel”; and open boxes for free text responses. Descriptive statistics such as frequency, mean and standard deviation will be used to summarise the data from these questions.

Thematic analysis and coding of free text responses - free text responses to open-ended survey questions will be analysed through qualitative content analysis. Two coders will independently code the text responses using Nvivo® software. Coders will meet to resolve any discrepancies and to solidify themes and categories under each research question.

Data collection tool - all data will be collected through Qualtrics ®. To undertake data cleaning, the Qualtrics data will be exported as an excel file. Data cleaning will be performed by removing any missing or incomplete data. Ambiguous data will be followed up with the participant and kept if discrepancies are able to be resolved or excluded if an adequate solution was not met.

Data analysis - data analysis will be undertaken through Qualtrics, where it related to frequencies. For statistical analysis, GraphPad Prism was utilised. Nvivo was used for coding and thematic qualitative analysis.

Discussion

The evaluation is yet to take place; however, we expect to have engagement, perceived value, satisfaction, and uptake of high-fidelity track data to present by the conference date. We expect to see those participants that take up the high-fidelity track to have a higher perceived value of the course and satisfaction with the materials as it provides a more authentic and engaging experience. We also expect to see at follow-up, a higher follow-through on the creation of app ideas into realised solutions for those that completed the high-fidelity track.

We enabled a collaborative learning approach with the workshop portion of our activity, giving participants the opportunity to share their app ideas with one another. The workshop fosters a community of diverse individuals with diverse backgrounds to realise the potential of this digital transformation of health. The workshop has two opportunities for participants to share their app idea, discuss with their colleagues and receive both peer and instructor feedback on their idea. We anticipate participants will gain the confidence in presenting these ideas back to their organisations and enable further collaboration within their teams.

There are many software tools for developing effective wireframes and app prototypes in addition to Figma. In Table 2, we outline the key features that differentiate the programmes from Figma. We required software that would be free for participants to use, had a range of community resources, and didn’t require additional apps to create a wireframe and prototype. According to the global 2022 Design Tools Survey by UXTools, of 4260 respondents, 81.7% (N=3480) of respondents used Figma as either their primary or secondary design tool (3150 primary, 375 secondary). This is the widest adoption compared to the other tools we looked at (Table 2), ergo participants are more likely to encounter using Figma in the realisation of their app development journey. Using Figma produces a richer and more engaging experience, compared to PowerPoint, which does not permit any of the key differentiating features when creating a wireframe and prototype discussed in Table 2.

Table 2: Comparison of Figma to PowerPoint and other popular design tools

Features	**Figma**	PowerPoint	Adobe XD	Sketch	MockFlow	Justinmind
Free version	**Yes**	No	No	No	Yes	No
Wireframing	**Yes**	No	Yes	Yes	Yes	Yes
Collaborative design	**Yes**	Yes	No	Yes	Yes	Yes
Cloud based	**Yes**	Yes	No	No	Yes	No
Other apps required	**No**	No	No	Yes	No	No
Advanced Prototyping	**Yes**	No	Yes	Yes	Yes	No
Community resources	**Yes**	No	No	No	No	No
Ease of use	**Moderate**	High	-	-	-	-
Complexity of prototype	**High**	Low	-	-	-	-

One significant limitation we foresee is the time constraints for our participants to learn how to use new software. Unaided, the learning curve to get started with Figma is a steep one. The platform, although superficially resembling common graphic design tools, in our view is not innately intuitive to a non-technical audience. For many participants, the time investment might be too burdensome to learn how to utilise the programme, even though the output is superior. We mitigate this by providing a video walkthrough tutorial, where within 15 minutes participants can get started.

Collaboration with our partners has been a crucial aspect of the development of this course. Having participants from diverse backgrounds with such wide variety of working roles requires a variety of perspectives on how to enable the most effective learning experience for each learner. In the future, we aim to continue building on the collaboration achieved with this activity. Leveraging existing partnerships within the university, such as the School for Computing and Information Systems, and external partners to provide an opportunity for our non-technical participants to share Figma prototypes they've created directly with developers. The collaboration enabled by this activity encourages the use of real-world tools helping to facilitate the digital transformation of the Australian healthcare system.

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