THE EFFECTIVENESS OF DEVELOPING A NEW EXPERIMENTAL EDUCATIONAL SYLLABUS FOR TEACHING USER INTERFACE MOBILE APP DESIGN TO STUDENTS OF VISUAL COMMUNICATION DESIGN IN AMMAN, JORDAN

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PLAGIARISM

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

It is becoming more and more essential to use mobile applications as consumers are more comfortable reading and interacting with soft-form information. Therefore, user interface designers have become increasingly relevant as mobile applications become more popular. Despite its importance, UI courses for mobile applications design are not a part of all graphic design syllabi at Jordanian universities for visual communication design. In addition, UI design for mobile apps courses are not included in the curriculum, resulting in graduates with scant knowledge of the subject. Thus, it is common for newly graduated students to self-educate through free online courses or to be trained by costly education programs of specialized companies, which are often non-academic-commercial in nature. Thus, the purpose of this study is to develop a novel experimental educational syllabus proposition for teaching user interface mobile application design to students of visual communication design at Jordanian universities. To achieve this, the current study followed a methodological approach of design-based research where we used an iterative, bottom-up approach to developing syllabus programs. This methodology allowed for several iterations of the syllabus. The first draft was based on a content analysis of 13 prominent syllabi available online from top-ranked universities and commercial online course providers. Then the first draft was refined based on the perceptions of five experts. As a result, this study provided a comprehensive examination of the need for specialized courses on UI mobile app design as part of the bachelor's degree. The proposed syllabus is divided into four parts: introduction, UI process, UI case studies and best practices, and a final project. The introduction covers the basics of UI and UX design and the process of mobile app design. The UI process section covers theory and practice, tools, and publishing. The case studies and best practices section focuses on medical UI mobile app design and includes a UI checklist tool. The final project requires students to use free materials to present their work and present and review their projects with the class. This syllabus was evaluated by students and experts in the field and received positive feedback. The results of this study are applicable to the field of education, curriculum development, and UI mobile app design, as well as providing evidence of the value of involving experts and practitioners in the design process. This study also has implications for improving existing

teaching methods and developing future syllabi, which may help to bridge the gap between theory and practice in the field of UI design for mobile apps.

ÖZET

Daha konforlu bir okuma ve “soft-form” bilgilerle etkileşimde bulunma sürecinde mobil uygulama kullanımı tüketiciler açısından giderek daha gerekli hale gelmektedir. Bu nedenle mobil uygulamalar yaygınlaşmakta ve kullanıcı arayüzü tasarımcılarının önemi de artmaktadır. Bütün bu önemine karşın, UI (Kullanıcı Arayüzü) mobil uygulamaları Ürdün üniversitelerinin grafik tasarım programlarında yer almamaktadır. Buna ek olarak, UI mobil uygulama derslerine de yer verilmediğinden, mezunların bu konuyla ilgili bilgileri yetersiz kalmaktadır. Bunun sonucunda yeni mezun öğrenciler ya ücretsiz çevrimiçi programlarla kendilerini eğitmeye çalışmakta ya da akademik olmaktan çok, doğal olarak ticari amaçlar güden pahalı kurslara yönelmektedir.

Bu çalışmanın amacı, Ürdün üniversitelerinde eğitim gören görsel iletişim tasarımı öğrencilerine yönelik yeni ve deneysel bir UI mobil uygulama tasarımı eğitimi programı önerisi geliştirmektir. Bunu sağlamak üzere temelden yukarıya doğru ve tekrar edilen bir yaklaşımla ele aldığımız metodolojik ve tasarım esaslı bir yöntem kullandık. Bu yöntem ders programlarında çok sayıda tekrarlama içermektedir.

İlk planda üst düzey üniversitelere ve ticari kurslara ait, çevrimiçi ulaşılabilen 13 ders programının içerik analizi yapıldı. Daha sonra ilk tasarlanan ders programı beş uzmanın görüş ve incelemesine sunuldu. Sonuç olarak bu araştırma lisans programlarında yer alacak UI mobil uygulama tasarımı derslerine yönelik ihtiyacı karşılayan kapsamlı bir incelemeye dönüştü.

Önerilen ders programı dört bölüme ayrılmıştır: Giriş, UI eğitim süreci, UI en iyi uygulama örneklerine yönelik araştırmalar ve final projesi.

Giriş bölümünde UI ve UX tasarımı temelleri ve mobil uygulama süreçleri yer almaktadır. UI eğitim süreci bölümünde kuram, uygulama, araçlar ve yayınlama yöntemleri üzerinde durulmaktadır. UI en iyi uygulama örneklerine yönelik araştırmalar bölümü tıbbi UI mobil uygulama tasarımına odaklanmakta ve UI kontrol listesi aracını tanıtmaktadır. Finalde ise öğrencilerden serbest malzemelerden yararlanarak bir proje ortaya koymaları ve projelerini iyice gözden geçirdikten sonra da sunmaları beklenmektedir.

Hazırlanan bu ders programı öğrenci ve uzmanlar tarafından değerlendirilmiş ve olumlu geri dönüşler elde edilmiştir. Bu araştırmanın sonuçları eğitim, program geliştirme

ve UI mobil uygulama tasarımı alanlarında kullanılabilir, ayrıca tasarım sürecine uzman ve uygulayıcıları da dahil etmenin önemine de vurgu yapar. Araştırma ayrıca UI mobil uygulama tasarımı alanında kuram ve uygulama arasında bir köprü oluşturmaya yardımcı olmak üzere var olan eğitim yöntemlerini geliştirmeyi ve gelecekteki programlar konusunda bilgilendirmeyi de amaçlamaktadır.

DEDICATION

I would like to dedicate this thesis to my parents Fayzah & Tareq. Thank you so much for everything! Words can hardly describe my thanks and appreciation to you. You have been my source of inspiration, support, and guidance. You have taught me to be unique, determined, to believe in myself, and to always perservere. I am truly thankful and honored to have you as my parents.

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CHAPTER 1

INTRODUCTION

1.1. Background

Graphic design plays an important and effective role in the final output of user interface mobile applications (UI for Mobile Apps). Due to the fast growth of technology in this sector, it became most important to have a specialized graphic designer rather than a programmer who usually is not experienced in design Apart from this, the importance of mobile applications is increasing day by day as consumers are more comfortable reading and interacting with digital information form. Thus, increasing importance of mobile applications has also increased the importance of user interface designers (Bhandari, Neben, Chang, & Chua, 2017). Dharmayanti, Bachtiar, and Wibawa (2018) stated that designing a User Interface (UI) is the design of machines, applications, and other home appliances, through which organizations try to improve and enhance the usability and users of their products or applications.

Dharmayanti et al. (2018) noted that UI design enhances the attractively, quality, and easiness of mobile applications or machines. Therefore, the importance of graphic designers has considerably increased. Bhandari et al. (2017) found that users can perceive the quality of the application in two aspects. Firstly, if users are using the application in their daily routine for their tasks, they can perceive the quality of the UI; this perception is regarded as pragmatic. While second is hedonic, which refers to the pleasant interaction and experience of individuals, based on which they perceive the quality of the user interface of application design (Bhandari et al., 2017). Based on these aspects, users can quickly perceive the quality of the design of UI (Hassenzahl, 2004). Bhandari, Chang, and Neben (2019) have highlighted another reason behind quality perception, which is the emotional factor. Authors believe that the quality of the UI design can target users emotionally, which is amongst the strongest factors in developing their perception regarding UI design. Therefore, it is also important to keep in mind the emotional aspect of users, which helps graphic designers to design UI in a way which is in accordance with the emotional aspect of users' perceptions and preferences (Bhandari et al., 2019; Bhandari et al., 2017).

As the importance of UI designers has been highlighted, there is a need for a comprehensive, effective, and practice-based syllabus for designing the user interface for mobile applications. However, literature, as well as educational institutions, are mostly lacking in a good syllabus, particularly in Arab countries (Blair-Early & Zender, 2008; J. Johnson, 2020; Seraj & Wong, 2012). Gosselin (2002) argued that a comprehensive and good syllabus for user interface design is the primary and basic need for students to learn in order to be successful in their design careers. Furthermore, the author asserted that a good syllabus provides both theoretical as well as practical knowledge. However, most of the UI design syllabi lack a strong theoretical base, especially the commercial organizations are only focusing on providing practical knowledge, which often leads to a lack of true knowledge for designers, and they do not know the basic theories or principles, which ensure the quality of the design (Constantine & Lockwood, 2001; Fadli, 2020; Galitz, 2007; J. Johnson, 2020).

Consequently, it is important the development of a good syllabus for the designing of user interfaces for mobile applications, which is based on theories and principles. This syllabus should provide not only theoretical knowledge but also practical knowledge (Norman, 2013). Furthermore, designers should be able to have a complete perspective of user interface design, which should include elements such as user needs, user expectations, usability criteria, and accessibility (Norman, 2013). Additionally, the syllabus should provide a well-balanced combination of design thinking and process of design that ensures that a good user interface is designed and is user-friendly (Constantine & Lockwood, 2001; Fadli, 2020).

1.2. Problem Statement

Curriculums in Jordanian universities are deficient in UI Mobile App courses, resulting in graduates without any background in this subject. New graduates educate themselves either through free self-education programs or through expensive specialized training companies, which might be non-academic- commercial companies (Al-Adwan & Smedley, 2012). Owing to this, one can notice major defects in Mobile App UI due to a lack of academic knowledge. These defects may include, firstly, owing to the reality that designing UI Mobile App is a new topic and not a part of the teaching program, graduates

do not meet the market needs (Bhandari et al., 2017). Secondly, some commercial Mobile App UI design training programs focus on using designing programs rather than designing theories (Blair-Early & Zender, 2008; Fu, 2012). Besides, many designers cannot distinguish between "design for art" and "design for the user" (Rizzo, 2011). Finally, not all graphic design syllabi in Jordanian universities don't have specialized courses on designing UI for Mobile apps. Therefore, this study is aims to evaluate the effectiveness of a new experimental education syllabus for user interface design for mobile applications for visual communication design students.

1.3. Thesis Question

The thesis develops the following research questions.

1- What is the effectiveness of the new experimental educational syllabus for teaching user interface design for mobile apps for visual communication design students in Amman-Jordan?
2- How effective is the new experimental syllabus for teaching user interface design for mobile apps in improving students' knowledge and skills, and what areas of the syllabus need to be improved?
3- How does the new experimental syllabus for teaching user interface design for mobile apps impact the level of graphic design students' ability to design UI mobile apps?

1.4. Research Objectives

Based on the background information, problem statement, and purpose of the study, the following objectives are developed,

1. Building up a new experimental syllabus for teaching user interface design mobile apps with a modern measurable learning procedure.
2. Evaluating the effectiveness of a new experimental syllabus for teaching user interface design for mobile apps to students in order to improve it.
3. Evaluating the graphic design student's level in designing Mobile App UI after the new experimental syllabus.

1.5. Significance of the Study

The vast spread of smartphone applications and their continuous improvement that result in huge profits make it most important to improve the educational syllabus for designing UI for Mobile Apps. The balanced theoretical and practical learning of the experimental syllabus for designing UI for mobile apps happens in this experiment through a new teaching methodology that insists on intense practice, building a professional perspective, and incorporating innovation (Blair-Early & Zender, 2008; Galitz, 2007; J. Johnson, 2020). This study can be useful for educational institutions like universities and colleges. Besides, this research can be beneficial for new start-up companies which need to train their employees. Finally, this study may be useful for anyone interested in searching for this kind of job.

1.6. Thesis Structure

The first chapter of this study highlights the background information about the topic as well as the problem statement, research objectives, question, and significance of the study. The second chapter is comprised of previously published material as well as the syllabus of some educational institutions regarding user interface design. The third chapter of this study is related to methodology, where the methods to conduct this research are elaborated. The fourth chapter presents the analysis of the different stages of developing a new syllabus and the evaluation of the final syllabus draft based on students' and experts' perceptions. Finally, the last chapter presents the discussion of research findings as well as theoretical, practical, and methodological contributions of the study alongside the limitations and future directions.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

The purpose of this chapter is to provide an overview of the research gap as well as the concepts of user interface and user experience design. It also provides a discussion of related theories and models that inform the design of the study syllabus.

2.2 Research Gap and Relevance

Many studies and institutions have already developed syllabi with respect to user interface design for mobile applications; however, there is a lack of sufficient evidence regarding focusing on principles and theories (Davis & Yen, 2019). Conversely, institutions and some commercial organizations focus on delivering knowledge regarding how to use programs for designing purposes rather than focusing on basic theories and principles (Seraj & Wong, 2012); therefore, it is paramount significant to highlight some principles as well as theories before elaborating the syllabus design for the user interface of the mobile application. However, before elaborating on the design principles, it is important to differentiate the user interface and user experience.

2.3 User Interface and User Experience

User experience (UX) is termed as the experience and interaction of users with the products, machines, or applications of the organizations; however, UI is termed as the actual interaction of users with the assets of the organizations (Dharmayanti et al., 2018). Particularly, UI is related to the quality of the design and aesthetics of products or applications. There are three major differences between UX and UI. Firstly, UX is specifically related to the functionality, serviceability, or features; however, UI is particularly related to the quality of interaction between users and UI – it means the design, aesthetics, and other quality-related aspects are termed in UI (Blair-Early & Zender, 2008; Dharmayanti et al., 2018). Secondly, UX is connected to the social factor of market research, where the needs and wants of users are evaluated. However, UI particularly addresses the design factor, where users perceive the quality of the product or application

through what they listen to, realize, and feel (Fayollas, Martinie, Navarre, Palanque, & Fahssi, 2014; Fu, 2012; Gosselin, 2002). Finally, user experience is concerned with the whole procedure of product analysis and delivery; however, the user interface targets the technical elements with respect to the design of the application (Fadli, 2020; Ferreira, von Wangenheim, Filho, Pinheiro, & Hauck, 2019). Although UX and UI are both important; however, this study only focused on UI design.

2.4 User Interface Design Principles

As mentioned above, UI design principles are important because they provide helpful guidance for designers to stick to rules and regulations in order to ensure quality as well as to save considerable time (Galitz, 2007). Therefore, the following are the basic principles for UI design, which are proposed by Constantine and Lockwood (2001).

2.4.1 The structure principle

Constantine and Lockwood (2001) asserted that the design of UI should be clear and must be arranged in a meaningful manner; however, it can be applied with respect to those models which are familiar to users. Similarly, this principle also states that UI design helps arrange related things together, while irrelevant things should be separated (Darejeh & Singh, 2013). Apart from this, the structure principle emphasizes the identification of similar characteristics among things and making them resemble each other; however, it also directs to differentiation of those things which are dissimilar. Finally, the structural principle is overall helpful for designers regarding the architecture of UI (Constantine & Lockwood, 2001).

2.4.2 The simplicity principle

Constantine and Lockwood (2001) noted that, unlike the common perception that complex designs are more attractive, the design for UI should be simple and easy to understand. Blair-Early and Zender (2008) asserted that the simplicity principle states that tasks should be simple and easy for users, which makes applications more attractive and user-friendly. One of the major concerns while designing UI is the language concern, which directs designers to make communication clear and in the user's language (Blair-Early &

Zender, 2008; Marcus, 1995). Finally, the simplicity principle requires designers to provide shortcuts, which may prove to be helpful for elaborating and explaining the long procedures (J. Johnson, 2020).

2.4.3 The visibility principle

This principle directs designers to provide all necessary and important options, which must be easily visible; however, these options may not divert the users from the main information (Constantine & Lockwood, 2001). In other words, adding extra options, which may not be necessary, may lead to the distraction of users (Bhaskar, Naidu, Babu, & Govindarajulu, 2011; Fadli, 2020). Similar to the structure principle, the visibility principle also emphasizes adding only relevant information and avoiding irrelevant options, which may lead to distractions (Ferreira et al., 2019). However, it is important that all the necessary options must be added (Constantine & Lockwood, 2001).

2.4.4 The feedback principle

Constantine and Lockwood (1999) asserted that the feedback principle is specifically related to notifying users regarding the information, errors, or updates which may be related and helpful for users. This kind of feedback is necessary to provide users easiness. For instance, if a user opens an application and it requires permission from users regarding the phone model or location, it must notify the user that it will access that information. Similarly, while downloading something from the application, it will notify through the bar or a short message that downloading is in process. This kind of feedback is helpful for users as it provides a user-friendly environment. Constantine and Lockwood (1999) focused on clear, unambiguous, and comprehensive feedback in this principle.

2.4.5 The tolerance principle

This principle emphasizes that the application's design must accommodate tolerance and flexibility, which means it should prevent users from errors (Constantine & Lockwood, 1999). For this purpose, the user interface shortly interferes with the preferences of users while they are making mistakes. For instance, while fulfilling a form or putting a password, the user interface prevents users from entering the wrong password (Fayollas et al., 2014).

Another example is the form which only allows figures or pin and does not allow any English alphabet; thus, it not only prevent users from making mistakes but also show them the error, which means this principle is connected to the feedback principle.

2.4.6 The reuse principle

According to this principle, a design must reuse the components, remember the information and maintain consistency in order to provide more easiness to users (Constantine & Lockwood, 1999). This principle minimizes the need for the user to remember the information. For instance, at the start of an application, it receives the users' information; however, in the second step, if it again asks for the same information, it means the design does not provide consistency, and it is not using the saved information for its operations; thus, the user must go through the hectic routine of putting the same information again and again. However, the reuse principle discourages such operations and user interface design (Constantine & Lockwood, 2001).

Apart from the above, there may be some other user interfaces principles like usability heuristics, ease of use, consistency, progressive disclosure, reducing cognitive load, information hierarchy, space distribution, discoverability, and feedback; however, such principles also fall under the abovementioned categories, which are widely and more generally discussed.

2.5 Learning and Instructional Design Theories

Similar to the principle of UI, curriculums are available regarding the user interface of designing mobile applications; however, institutions and scholars have not focused much on theories. Antle and Wise (2013) asserted that theories provide base and true guidelines to help designers in designing user interfaces. Similarly, Fu (2012) noted that understanding the user interface without knowing theories may lead to a lack of true knowledge. Therefore, principles and theories are both necessary to better guide designers regarding the user interface design of mobile applications. Following are the theories which are important in this regard.

2.5.1 Instructional design theories

In order to improve the specifications and quality of instruction, certain theories are prevalent and important to note for design curriculum, which is explained below.

2.5.1.1. Situated Cognition Theory

This theory emphasizes both forms of learning, including theoretical and practical. According to Kirshner, Whitson, and Whitson (1997), this theory mainly touches on the concept that knowing and doing are not separate; rather, a person's knowledge is valuable when he/she is able to apply that knowledge. Therefore, theoretical and practical knowledge is valuable. This idea can be seen in the development of mobile app user interfaces. In this case, designers need to understand the user, who will be using the app, and be able to incorporate theoretical and practical knowledge into a design that is usable and intuitive. As such, this theory has great importance in the development of mobile app user interfaces.

2.5.1.2. The ADDIE Model

This model is comprised of five different stages or steps which are necessary to keep in mind while professional designers design user interfaces. These steps include analyzing, designing, developing, implementing, and evaluating. These steps help designers to profoundly investigate the needs, preferences, and desires of users in order to make user interfaces more personalized, attractive, and feasible for a maximum number of users (Spatioti, Kazanidis, & Pange, 2022; S.-K. Wang & Hsu, 2008). Consequently, the ADDIE model is paramount in the development of user interfaces, as it helps designers to understand the needs and preferences of users. Furthermore, when designers go through each of the five stages, they can create user interfaces that are rich in features and specific to the user. Therefore, it is important to incorporate the ADDIE model in the process of developing mobile app user interfaces for optimal results. By understanding the needs and preferences of users, as well as the theories that drive effective designs, developers can create user interfaces that are tailored to their specific users.

2.5.1.3. Bloom's Taxonomy of Learning Objectives

This theory emphasizes certain stages or steps which are helpful in learning. The steps include remembering the learning, understanding the knowledge, applying the acquired knowledge and learning, analyzing the acquired and applied knowledge, critically evaluating the applied learning, and creating useful knowledge bases (Bloom, Krathwohl, & Masia, 1984; Huitt, 2011; Spence, 2019). Therefore, Bloom's Taxonomy of Learning is key in the process of learning and applying knowledge, which makes it important to consider when developing mobile app user interfaces. This theory is helpful in understanding the needs, preferences, and desires of users, as well as the best ways to apply theoretical and practical knowledge in developing user interfaces. By using this theory, designers can ensure that their user interfaces are designed in such a way that they can effectively meet the needs of users while being intuitive and usable. Furthermore, when this theory is applied, it helps to ensure that user interfaces are effective in the learning process.

2.5.1.4. The SAM Model

This model emphasizes the flexibility of the learning syllabus, where the designer designs the user interface; however, he/she reviews it again and again whenever it needs improvement.

This model is helpful for taking feedback from learners regarding necessary improvements. Also, the SAM model helps designers and professionals to continue their improvement process, which makes the user interface better each time (Jung, Kim, Lee, & Shin, 2019). Moreover, the SAM model helps designers to design user interfaces in an iterative manner, allowing for a more organized process of user interface creation. This helps to ensure user interfaces are regularly updated and improved, which helps to make them more usable and intuitive. Furthermore, this model emphasizes the importance of flexibility in learning, which can be applied to user interfaces as well. Through the SAM model, designers and developers can create user interfaces that are flexible and can be easily updated and improved.

2.5.2 Project-Based Learning theory

Project-based learning (PBL) helps to enhance the knowledge, skills, and abilities of students with respect to the application of knowledge on real-world challenges, as this approach requires them to solve such real issues in an effective and efficient manner (Guo, Saab, Post, & Admiraal, 2020; Shin, 2018). This approach is contradictory to the commonly prevailed approach, where without practical implications, instructors deliver knowledge, and students do not post questions, give answers, or face challenging practical, real-world scenarios. Putri, Artini, and Nitiasih (2017) asserted that PBL is based on both learning and doing together.

The structure of PBL is related to the long term and specifically centred on students. In such PBL-based classes, students need to manage and organize their work by themselves in addition to managing their time and performance (Markham, 2011). This approach is specifically beneficial for user interface design students as it helps them gain a practical understanding to deal with future unseen challenges. In other words, this would also help designers to think creatively (Blumenfeld et al., 1991; Galitz, 2007). There are seven elements regarding PBL, which will be explained here shortly. Firstly, PBL provides a challenging problem or question, which is provided to learners to solve or answer it, respectively (Solomon, 2003). Secondly, students are involved in sustained inquiry, which means they involve in harsh and tough questioning, and by utilizing resources, they try to apply the gathered information (DeFillippi, 2001).

The third element is authenticity which is related to a real-world context, which means tasks or activities provided on the basis of real-world challenges related to the lives of individuals. The fourth element is students' voice and choice, which means students select their ideas in accordance with their preferences and share ideas in their own way (Kokotsaki, Menzies, & Wiggins, 2016). The fifth element target students' and teachers' reflection on the shared ideas, investigated information, and work of students. Also, they critically discuss students' work, including the quality, barriers, and choices to overcome those barriers. The sixth element is related to receiving feedback and working for the improvement of the processes or things. Finally, when this work or project is improved, students present it or make it public in front of other people who may not be part of the class (Condliffe, 2017; Gary, 2015).

This is a very important part of the PBL as it helps to develop communication, interpersonal, and other skills in students. Presenting work also provides them with an opportunity to receive feedback from people outside of their school or class. This helps to improve their experience and can also help them become aware of their weaknesses. Thus, the SAM model and PBL provide an effective and efficient way to design user interfaces that can be constantly improved.

2.5.3 Cognitive Load Theory

This theory explains the procedure through which individuals process information, remember it or the extent to which the amount of information is utilized (Sweller, 2020). The cognitive load is divided into three kinds intrinsic, extraneous, and germane (Sweller, 2018). Firstly, intrinsic cognitive load is related to the determination and work of an individual who is connected to a specific topic (Sweller, 2018). While Novak, Daday, and McDaniel (2018) asserted that extraneous cognitive load specifically highlighted the importance of the process through which information is provided or reached towards the learner. Finally, germane cognitive load is related to the effort or work which is particularly done to generate an eternal supply of knowledge (Klepsch & Seufert, 2020).

Sweller (1988) asserted that the cognitive load could be minimized based on the instructional design, which means the effectiveness of instructional design will decide to what extent cognitive load is reduced. McLaren, van Gog, Ganoe, Karabinos, and Yaron (2016) and Skulmowski and Rey (2017) provided useful measures to measure cognitive load in terms of the level of mental effort for work. Khalil and Elkhider (2016) proposed a framework of three forms of memory where sensory memory takes information from the environment, and this information is passed to working memory, where the learner gives attention. If the learner performs elaborative rehearsal, it transforms working memory into long-term memory. Otherwise, it is again transformed into working memory, which is short-term. This process highlights the effort of an individual from a cognitive psychological perspective.

Baddeley (2013) noted that working memory is short in duration, and this limitation can be dangerous in the sense that learning may be lost owing to cognitive load. In other words, cognitive load can have a negative effect on the learning process of individuals;

however, the effect may vary across different individuals in accordance with the level of their mental strength.

This shows that cognitive load is an important factor to consider while designing an instructional activity. If a designer fail to optimize cognitive load, it may lead to a decrease in the learning process and a reduction in the overall effectiveness of instructional activities in terms of user engagement, satisfaction, and performance. Therefore, the cognitive load should be taken into account while designing and developing user interfaces. It is worth noting that the SAM model and PBL both help in reducing the level of cognitive load by providing an effective instructional design to support the user interface design.

2.6 Designing a User Interface Mobile Application Syllabus

With the increasing importance of mobile applications in this technological age, the significance of graphic designing has increased. Owing to this enhancement of importance, the user interface designers need proper guidance and syllabus, which is often preferred regarding their practical training; however, theoretical and knowledge-based training is equally important, which is often ignored or given less importance. Following is the theoretical and practical knowledge, which is already explained; however, elaborated here shortly.

2.6.1 Theoretical knowledge

In theoretical knowledge, first of all, learners need to understand and have a clear understanding of the basic underlying principles and theories of user interface design. Apart from this, there must be a clear understanding regarding the difference between the user interface and user experience – most of the learners may be confused among both choices. Besides, the theoretical knowledge includes understanding the brand platforms and interaction behaviors, which are also highlighted above, e.g., the emotional aspect of the users' perceptions (Bhandari et al., 2019; Blair-Early & Zender, 2008; Darejeh & Singh, 2013). Additionally, knowledge about style guides has significant importance in user interface design. Style guides may include understanding logo design, color palettes, fonts, grids, iconography, and photography (Ferreira et al., 2019; Fu, 2012).

2.6.2 Practical Knowledge

As this study focuses on project-based learning, which emphasizes theoretical as well as practical knowledge, therefore, the practical knowledge may involve prototyping tools like Adobe experience design, art tools which may include adobe Photoshop, different UI elements, patterns, principles, and material guidelines. Particularly, in prototyping and testing procedure depends upon certain steps, which include building a prototype, carrying the usability tests, synthesizing test findings and prototype iteration (Blair-Early & Zender, 2008; Fadli, 2020; Fu, 2012).

2.7 Teaching Skills and Techniques

As this study is based on the methods to test the newly designed curriculum, therefore, the practical implementation of that syllabus is also important, where instructors play a significant role (Darejeh & Singh, 2013; Dharmayanti et al., 2018). For this purpose, there are some guidelines which are helpful for instructors to present the newly designed curriculum successfully. First of all, instructors need to develop critical thinking among learners as the design of UI is based on theoretical and practical knowledge. Also, project-based learning suggests that understanding the knowledge and applying that knowledge is necessary for UI design (Blumenfeld et al., 1991; Gary, 2015; Guo et al., 2020).

Secondly, teachers and instructors need to develop problem-solving skills among learners. The situated cognition theory also states that individuals need to be independent, and instructors need to provide a challenging environment where scenario-based problems, particularly related to real-world issues, have importance to developing problem-solving skills (Kirshner et al., 1997). Apart from this, analytical skills may be helpful for learners to analyze unprecedented projects' designs and challenges, thus, creating creativity and innovation. Finally, teachers and instructors should develop an environment of discussion in the classrooms, where learners may share their knowledge and experiences in order to get a profound understanding of the subject (Antle & Wise, 2013; Davis & Yen, 2019; Dharmayanti et al., 2018; Marcus, 1995).

2.8 Chapter summary

In conclusion, this chapter has discussed the need for theoretical and practical knowledge in user interface design. Various teaching techniques have also been discussed so that the learners of this course can apply theoretical knowledge to real-world scenarios. Furthermore, instructors and teachers should develop creative and analytical thinking among the students in order to provide the best learning outcomes. In addition, a challenging environment should be practiced in order to develop problem-solving skills and encourage creativity.

CHAPTER 3

METHODOLOGY

3.1 Introduction

The second chapter has reviewed the previously published literature; however, this chapter will evaluate the procedures which will be utilized to conduct this research. It will involve questionnaire design, data collection, analysis, sampling, etc. Following are the detailed procedures mentioned. (See Appendix A- Overview of research methodology)

3.2 Method Selection

Following the research objective, the current study's main aim is to develop a new experimental educational syllabus for teaching user interface mobile app design for students in the visual communication department in Jordanian universities. In this kind of study, the purpose is not to test hypotheses or explore a phenomenon to build a theory or understand the contextual issues of the problem. Rather it is about designing a new artefact in the form of a syllabus in the education field. From his curriculum development and implementation research background, Van den Akker (1999) writes that "traditional" research approaches such as experiments, surveys, and correlational analyses are hardly helpful for solving design and development problems in education. Thus, he suggests that design research is the most suitable approach for this type of research. Among the main reasons for design research, he says, is the complexity of educational reforms around the world. It is impossible for the government to develop ambitious reforms on its own, but rather rigorous research is needed to aid in their creation and implementation.

To better understand and promote learning, this work may involve developing technical tools, curriculums, and theories. Many learning scientists believe cognition does not exist solely within an individual's mind. Instead, it is a process that is associated with the knowers, their environment, and what they do. In other words, learning, cognition, knowledge, and context are inextricably linked and cannot be considered separate entities or processes (Barab & Squire, 2004). As such, the current research followed a methodological approach of design-based research (F. Wang & Hannafin, 2005).

3.3 Research Design

In our research, we used an iterative, bottom-up approach to developing syllabus programs (Songer & Kali, 2014). This technique produces syllabus templates and curricular activities in several repeatable cycles. Some classrooms use small groups of students to test design products so that the lessons can be evaluated for their validity and fit with the learning goals and target audience. The process of design work was cycled, followed by a cycle of implementation in a classroom setting (Barab & Squire, 2004), which follows the methodological approach of Design-Based Research.

3.4 Mixed-Methods Research Strategy

It is essential to use a variety of study approaches to better understand social phenomena (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Combining qualitative and quantitative data collection enables you to examine the intricacies of social phenomena in a way that provides a complete picture and a broader understanding of the problem.

Mixed-method tactics are classified as either concurrent or sequential by Creswell et al. (2003). Parallel and sequential stages are reflected in this two-category method proposed by Tashakkori and Teddlie (2003). Within each of the three categories of concurrent and sequential mixed methods tactics, Creswell et al. (2003) describe three variations. Several types of concurrent design exist, including triangulation, nested, and transformative. Sequential designs include sequential explanatory, sequential exploratory, and sequential transformative.

Of the six types of mixed-method research methodologies, a concurrent nested design fits the goals and conditions of this study most closely. Creswell et al. (2003) define a concurrent nested design as having the following characteristics:

- Qualitative and quantitative data are collected simultaneously during a single data collection phase;
- Research is guided by a primary method with a secondary database serving as a backup, where the secondary approach is a supporting one and is embedded or nested within the primary method;
- During data analysis, both methods are combined;

- In mixing the two methods, the information is integrated, and data sources are compared, which is typically accomplished in a discussion section or by displaying two different pictures side by side to provide a composite picture of the problem overall;
- Through the use of multiple methods, different perspectives are obtained as opposed to relying on one dominant method alone.

In this study, we use a combination of qualitative and quantitative approaches to collect and analyze data gathered in each cycle of syllabus development.

As a means of identifying the design concepts that we considered when creating our syllabus, we used a qualitative approach (Merriam & Tisdell, 2015). We selected a qualitative study approach based on the fact that many aspects of our analysis aligned with this strategy (Merriam & Tisdell, 2015). The design concepts related to eco-solution syllabus design need to be understood and defined. In our second approach, we gathered data over a 12-month period using generative documents related to the curriculum design process, including field notes detailing syllabus design team activities, participant records, and design artefacts such as multiple versions of a template for the sequence and goals of each lesson, which we named the syllabus story. The analysis of the data revealed an inductive process of coding observations and steps specified in the generative documents, which yielded a set of sequential design principles.

In contrast, a basic quantitative approach was chosen to develop a syllabus for research. This used descriptive analysis, which recorded data and their frequencies by using percentages (Gengatharan, Rahmat, Malik, & Yuet, 2021).

3.5 Implementation of Design-Based Research in The Current Study

As alluded to earlier, the current study was implemented using an iterative design principle using a design-based approach and mixed methods strategy. The final version of the syllabus will be a product of four iterations (cycles) as follows;

3.5.1 Problem Identification

This pilot study is designed to support the research problem by collecting data from Jordanians (Academic designers) who are graduates from 4 private universities: Middle

East university, Philadelphia university, Al-Zaytoonah University and Applied Science university in the visual communication design department and multimedia design department. The target was to reach 73 students who could determine the actual problem and gaps in the current syllabus.

The reason behind choosing these four private universities:

- All of them are private university
- All of them are in Amman, 2 of them on Jordan street, and the other two on Airport Street.
- All of them established the department between 1991 and 2008.
- All of them are teaching visual communication design and multimedia design
- Two of them have master's degrees in design.

(See Appendix B-pilot study)

This pilot study is designed to ask about the following:

- The availability of specialized academic courses on UI design or UI mobile app design during their bachelor's degree because there is a misunderstanding between specialized user interface mobile apps design and general user interface design. As a result, we need to measure each of them individually.
- The availability of non-academic courses specialized in UI mobile app design.
- The demand for an intensive theoretical and practical training program specialized in UI Mobile app design.
- The preference for face-to-face or online courses. So we could decide if we do it online or face-to-face.

3.5.2 Syllabus development (Cycle One)

In the first iteration (cycle), exploring different syllabuses that teach UI mobile app design is imperative. Therefore, the development of the course syllabus proceeded through several phases.

In order to accomplish this, qualitative document analysis was conducted (document analysis). The qualitative analysis of documents can be used to review or evaluate them, but it must be interpreted according to the research interests of the researcher (Bowen, 2009).

- ✓ **Review previous syllabi related to UI mobile app design & make a comparison between them.**

Following the qualitative documents reviews, the first step is to choose 13 available online syllabuses and compare them from different perspectives—for instance, instructors' offerings, price, time, and content. For more information about the 13 syllabuses (see appendix C-13 Syllabus).

- ✓ **Summarized the findings of selected syllabuses.**

In reviewing the previous syllabus for the UI mobile app design course, we summarize the main points that shape the new design (see appendix D-Analysis).

- ✓ **Grouping similar features together.**

After extracting all features from the previous syllabus and grouping similar features together, we can decide which parts of each syllabus to use, edit, or develop to create the new specialized syllabus for this research. During this phase, we aim to design a syllabus that is consistent with all previous syllabuses.

- ✓ **Finalize the required features for our syllabus.**

In this step, we finalize the contents and features of the first iteration in order to launch the second cycle (see appendix E-first draft).

3.5.3 Expert's interviews (Cycle Two)

In this stage, we applied an evaluation based on experts' perceptions. According to Libakova and Sertakova (2015), in cultural studies, you can get valid results from qualitative expert interviews. Using expert interviews gives a better and more scientific conclusion than relying on subjective perceptions of individuals who have limited training and research experience (Gill et al., 2008). This type of researcher plays a prominent role in how valid and valuable expert interviews are in the social sciences. The choice of a particular interviewer can significantly influence the outcomes of the study. If you choose someone who has more extensive training and knowledge of the topic, they will provide

you with a more accurate assessment of the results. It would help if you did not use someone who is unfamiliar with the subject.

After we finish the first draft of the syllabus, we send it to five expert designers who specialize in user interface design or syllabus development to conduct expert interviews. Our goal was to review and develop the first draft syllabus developed by the researcher. The interview was conducted via email and Zoom.

This interview is designed to ask about the following:

1. How do you evaluate the first draft syllabus in terms of clarity and understanding of the titles? If not? What's your suggestion for modifying it?
2. How do you evaluate the first draft syllabus in terms of arrangement sequentially? If not? What's your suggestion for rearranging it?
3. What areas need improvement? If you have a chance to add, remove, or edit any part from the syllabus, feel free to mention it and write the reason behind that.
4. How do you evaluate the first draft syllabus in terms of being in line with the market? If not? What's your suggestion for modifying it?
5. Do you think that using adobe XD to teach the student to design UI mobile apps is a good choice? Why? If not? What's your suggestion?
6. Do you have any recommendations? (see appendix F-expert interview).

3.5.4 Building content of the syllabus

In this cycle, a pdf presentation with videos was created to make the content more attractive. Additionally, in the attached free book related to the syllabus, the researcher has collected a range of ready-to-use free materials. The data were collected from the latest books, articles, theses, and websites. (see appendix G -final syllabus & exclusive development).

3.6 Syllabus Evaluation

As part of the steps, the syllabus is consulted according to the needs of the relevant education unit level. Dvorghets and Shaturnaya (2015) contend that a good syllabus module is one that includes media, genre, context, case studies, practice, analysis, and evaluation. Syllabuses are used to prepare lesson plans, which means that the syllabus as a

learning process plan is not final. Afterwards, a lesson plan must be developed so that it is focused and concrete. In each curriculum and syllabus design, there is a need to conduct an evaluation, whether by using formative or summative (Aslan & Saglam, 2017).

The formative evaluation is the process by which a teacher, program director, or administrator assesses a student's progress in light of the goals they have set. This process is usually applied during the first few weeks and months of a student's instruction. In essence, it is an opportunity for the instructor or researcher to make necessary adjustments early to ensure that the syllabus design is progressing appropriately (Black & Wiliam, 2009). And while there are many forms of formative evaluation out there, the true formative evaluation will contain qualitative and quantitative measures taken at different points in time throughout your instruction.

Conversely, the summative evaluation is intended to provide both students and teachers (the researcher in this study) with feedback concerning their activities and progress in the courses they take (Bransford et al., 2006). The summative evaluation serves as a final project that allows students to demonstrate their knowledge, understanding, and ability in a specific field of study. In addition, the summative assessment serves as an objective measurement of a student's achievement and progress throughout a course (Inouye, Bae, & Hayes, 2017).

In this study, we applied both of them to give more rigor to the developed syllabus.

3.6.1 Syllabus evaluation expert's interview

In this stage, we applied an evaluation based on experts' perceptions. According to Libakova and Sertakova (2015), in cultural studies, you can get valid results from qualitative expert interviews. Using expert interviews gives a better and more scientific conclusion than relying on subjective perceptions of individuals who have limited training and research experience (Gill, Stewart, Treasure, & Chadwick, 2008). The type of researcher plays a prominent role in how valid and valuable expert interviews are in the social sciences. The choice of a particular interviewer can significantly influence the outcomes of the study. If you choose someone who has more extensive training and knowledge of the topic, they will provide you with a more accurate assessment of the results. It would help if you did not use someone who is unfamiliar with the subject.

The syllabus literature suggests that any study should develop a set of evaluation criteria that can measure the various aspects of the syllabus (Smith & Johnson, 1993). Unlike other types of syllabus development literature, the interface design lacks robust criteria. Thus, in the context of the current study, a set of criteria were extracted from the related literature to fit the nature of this study. (see appendix -H Criteria-Reference).

For this study, criteria were chosen from previous studies to serve as a reference for the questionnaire. In addition, questions were unified and distributed to meet the needs of experts conducting the expert's interview and expert's evaluation and students' evaluation in the current study. Those criteria are also met in the pilot study. Table 1 presents the questions and corresponding criteria.

Table (1): Evaluation Criteria

Criteria	**Question** (from reference)
Theoretical criteria	Please comment on the adequacy of the balance between theory (i.e., classroom) and practice (i.e., lab/shop/fieldwork) within the program. How much practical knowledge have you gained from this course?
Practical criteria	
Productive criteria	
Designing criteria	1. Does visual look of the application meets the stylistic expectation of the target audience? 2.Is there enough variation in the visual factors to establish a sense of visual interest in the application?
Evaluating the effectiveness of ready-to-use materials	Please explain whether the tools, equipment, and/or supplies listed for the practical components of the curriculum (if applicable) are satisfactory for program delivery (i.e., do they support the program's learning outcomes?). - Please explain whether there are adequate learning resources (e.g., print media, audio-visual materials) provided for program delivery and to actively engage students. Are the instructional materials designed and organized to facilitate teacher use?
Evaluating if the training program fits with the market industry	Please elaborate on the current local/provincial need for this type of training. Please elaborate on the current national/international need for this type of training. - Are the proposed learning outcomes and other curriculum elements in line with the European and global recommendations (e.g., DigComp, UNESCO, ICT competency framework, Better Internet for Kids etc.)?
Evaluating the demand for the	-Please indicate whether the need for this type of training will increase in the future, both locally and nationally. -Considering your complete experience with us, how likely would you be to recommend the course to your friends and family?

training g program	-Would you recommend this course to other students? If no, why not?
Evaluating the degree of fitness of the program to the academic standards	This question was created because the training program was designed for universities. However, due to difficulties, it was decided to do it online. How do you evaluate the benefits if we recommend to apply this training program in the universities?
Evaluating if the allocated time is suitable for the training program	-Please comment on whether the time allocated to EACH course is sufficient, excessive, or inadequate -Are the learning outcomes and educational content appropriate for the number of classes?
Evaluating the preference of the program: online or face to face	What are the attitudes and perceptions of students towards face-to-face and online courses?
Evaluating the trainer	Important Characteristics of an Effective Lecturer -Knowledgeable in subject matter What overall rating would you give the course instructor? What would you recommend to improve the instructor's performance? Would you take another course taught by this professor?
Recommendation	Please provide any additional comments regarding this program you feel have not been addressed previously.

Based on the above, the experts have been asked about their points of view regarding these criteria using a formative evaluation approach during the development process and before applying the syllabus by following the following steps.

Attach the final syllabus with a short description of the course and send it to the expert. Then after they read and review the final syllabus, they should answer the expert interview questionnaire, which is designed to measure if the syllabus is in line with the specific criteria or not. Therefore, If the expert approves the syllabus, we will apply it directly, but if their answers show that the syllabus does not align with the specific criteria, we should review it again.

3.6.2 Syllabus expert's evaluation

In this stage, the evaluation is done after the employment of the syllabus in the actual setting. The implementation was applied to a group of students. The students have been asked to develop their own projects after receiving the training course. As a final project,

every student or group should design 5 to 6 screens for mobile app design, and then they should present it using the free template that is provided. A live discussion followed.

The experts were asked to evaluate the syllabus through students' final projects (expert's evaluation). A short description of the final projects was attached and sent to the expert. The expert should then complete the post-test questionnaire that is designed to measure whether the final projects as outputs of the course were in line with the specified criteria or not; this will indicate the effectiveness of the syllabus. Table 2 shows the related questions and criteria of the experts' evaluation. (see appendix -I expert's evaluation).

Table (2): Criteria and questions of expert's evaluation

Criteria	Expert's Evaluation
Making sure that the **final projects** were delivered to experts	
Theoretical criteria Practical criteria Productive criteria Designing criteria	For each project there are 4 questions: 1- How do you evaluate the project in general? 2- How do you evaluate the project: applying the brand identity into UI screens? 3- How do you evaluate the presentation of the project: Designing Behance presentation for the app? 4- Do you have any recommendations? ---------- How do you **evaluate all** the **final projects** in general?
Evaluating if the training program fits with the market industry	How do you evaluate the student level after the training program will be high enough to qualify their entrance in**to the market industry**?
Evaluating the demand on the training program	After evaluating the **final project**, how do you evaluate the **acceptance of the training program for students, training center and universities?**
Evaluating the degree of fitness of the program to the academic standards	How do you evaluate the benefits if we recommend to **apply this training program in the universities**?
Evaluating if the allocated time is suitable for the training program	How do you evaluate the training program and the allotted **time**? 45 hours 15 theoretical 10 practical 20 final projects
Recommendation	Do you have any **recommendations**?

3.6.3 Syllabus student's evaluation

As a part of the formative evaluation, it is necessary to conduct a post-test for the actual user or students in our study. Following the completion of the course and the final projects, students should fill out the questionnaire to determine whether the course was effective. Similar to experts, a group of relevant criteria were developed to measure the effectiveness of the proposed syllabus. Table 3 presents the developed criteria and questions for post students' evaluation. (see appendix -J student's evaluation)

Table (3): Student's evaluation criteria and questions

Criteria	Students' evaluation
After finishing the training program of UI mobile app design, please answer the following questions	
In general	How do you evaluate the benefits you have gained from this training program?
Theoretical criteria	How do you evaluate the **theoretical knowledge** have you gained from **this training program**?
Practical criteria	How do you evaluate the **practical knowledge** have you gained from **this training program**?
Evaluating the effectiveness of ready to use materials	How do you evaluate the benefits of attached **ready to use free material** in **this training program**?
Evaluating if the training program fits with the market industry	How do you evaluate the training program, will be high enough to **qualify your entrance into the market industry**?
Evaluating the demand on the training program	-Will you **advise your workmates** in **this training program?** Yes/No/Maybe -Will you participate in a **second advanced training program**? Yes/No/Maybe
Evaluating if the allocated time is suitable for the training program	How do you evaluate the training program and the allotted **time**? 45 hours 15 theoretical 10 practical 20 final projects
Evaluating the preference of the program: online or face to face	After you finished this online training program. How do you evaluate the benefits of taking **online courses**? Do you prefer **Any future training program** to be **face-to-face or online or interactive online or there is no difference**?
Evaluating the trainer	-How do you **evaluate the trainer**?

Recommendation	Do you have any **suggestions** to improve the **training program or trainer's performance**? Could you write a **recommendations** about the program?

3.7 Research Context

The context of research gives the audience a sense of the "where", "who", "what", as well as "when" of the research. In this way, the reader is able to gain a better understanding of the background of the research. Essentially, this gives the reader a better understanding of the research questions (Gauch Jr, Gauch Jr, & Gauch, 2003). For the results of research to be comparable and useful for other similar studies, a context is crucial. Data analysis without clear context floats without a reference point for comparison.

3.7.1 The setting of the study

The setting of this study was divided into three major settings according to the stages of research.

The questionnaire was distributed to students via an online form regarding the pilot study. However, concerning course implementation, initially, we suggested applying the syllabus to Jordanian universities. The universities we have contacted have refused to let me use the syllabus as a course within the semester. They only give me a chance to do it as a workshop for 1-2 weeks. The Jordanians also switched to online learning after Covid-19, which makes it more challenging to convince them.

As a result, we suggested the following solution: offer the syllabus as an online training course through Masaq, an Arabic online educational training paid website, which allows every trainer to have his own website to teach and follow the students at the same time. The learners can take the course online through their website at their convenience and watch the discussion live through the Zoom application. Participants will be charged for the course. However, it will be free for the Jordanian sample we apply for the experiment.

In the case of experts, we conducted informal hiring for them, and their meetings occurred face-to-face and online via skype and Zoom apps.

3.7.2 Research Participants

Similar to the setting, this study also employed participants based on their stage of research. With regard to the pilot study, the participants were Jordanian students from the Middle East university and Philadelphia university and al Zaytoonah University in the graphic design and visual communication design department. The target was to reach students who could determine the actual problem and gaps in the current syllabus. We share the course on social media channels in Jordan, and 50 students registered for the course via google forms. But, from 50, just 38 students registered on the official website.

In contrast, in the post-implementation of the syllabus, the group of 26 participants were trained and completed the whole course until the end, and they answered the student's evaluation questions, where their 4 projects were used in the expert evaluation.

Whether they were in the pilot or evaluation phases, students were included in the study based on their work and study history as well as their Jordanian nationality.

In comparison, the experts were hired during the development and evaluation stages. In the development stage, 5 experts were hired to give their opinions regarding the first draft and revise the content based on their academic and practical experience. In the evaluation stage, 5 experts were also hired to evaluate the final draft of the syllabus before the actual implementation of the seven weeks training course. Same experts were also appointed to evaluate the final projects submitted by students and give their final assessment of the syllabus's effectiveness in delivering the intended goals. They were 7 experts, and all experts were selected based on long and thorough field experience and background.

3.7.3 Research Sample & Sampling Techniques

In a research design, a sampling strategy is critical because it impacts the reliability of the collected data, the type of analysis that can be performed, and the type of conclusions that can be drawn (Ritchie, Lewis, Nicholls, & Ormston, 2013). Purposive sampling and random sampling have both been used, depending on how deeply the researcher intends to delve into the phenomenon. We chose the non-probability method because we wanted to include a group of students that reflected the outcome of the activities within the new syllabus development rather than a probability sample since we wanted to ensure equal

representation of students in the sample. Thus, the research study will employ a purposive and random sampling technique in order to select a sample from a domain in mobile user interface design. To select participants for the research study, a purposive and random sampling method will be used.

Purposive samples are chosen in a non-random manner according to the study's objectives and features (Crossman, 2017). We chose a sample of individuals based on the assumption that they were subjective to the topic under investigation. Purposive sampling, according to Lewis-Beck, Bryman, and Futing Liao (2012), is defined as the selection of participants, settings, or other sampling units for a specific purpose. Sample units are selected because they possess specific features that facilitate a detailed exploration and understanding of central themes and questions. By using a Purposive Sample approach, the researcher will select those experts who are qualified and knowledgeable to participate in this study.

In contrast, the selection of students, whether in a pilot study or expert's evaluation, was based on the random sampling technique. Since all of the participants in this study are graphic design students and Jordanians, the research population is homogeneous. Because the nature of the questions to be asked in the study is the same, the sampling should be randomized. Bryman (2008) defines simple random sampling as a probability sample, i.e., each unit under study has the same probability of being included in the sample. Despite the fact that random sampling is commonly used in quantitative sampling procedures, it can be used minimally in qualitative research to reduce bias (Miles, Huberman, & Saldana, 2014). Considering the nature of this study, where the questions were diversified and included narrative answers and descriptive measures and thus required a small but representative sample, we applied a random sampling technique to hire 73 students for the pilot study and 26 students for student's evaluation stage.

The researcher will assign a number from 1 to 200 to each student in order to determine this figure. Students who fall on the 5th number in a roll from a list of 20 random numbers will be selected for the study. A probability sample is relevant for qualitative studies, according to Bryman (2008), since it provides a context for understanding the principles of qualitative research sampling and ensures that each element in a population has an independent and equal chance of being selected.

3.8 Data Collection

Qualitative and quantitative approaches were used to collect data for this study, illustrating the mixed-method approach. In keeping with the stated primary methodology emphasis, the majority of the data collection methods are qualitative. This study was conducted online at Masaq Training center, where students participated. The following forms of data were collected over fifteen weeks: a questionnaire, semi-structured interviews, and document analysis by the researcher. Using multiple data sets for qualitative research is important since it allows for a data triangulation strategy (Yin, 2003) that enhances data dependability, credibility, and confirmability (Watkins, 2012).

Data are gathered to respond to the research problem, test a hypothesis, and evaluate the results of the study. To gather information about a research problem, Kumar (2018) suggests two basic approaches depending on where the data comes from, and it is divided into two categories: primary data sources include; Surveys, observations, experiments, questionnaires, focus groups, interviews, etc. and secondary data sources include; books, journals, articles, web pages, blogs, etc. During a research investigation, information is collected or retrieved from existing sources, which is the difference between these two types of investigation.

With reference to the current study, syllabus development will utilize two sources of data in the development stages. The first stages utilized the extant literature and available online course syllabuses (documents) to develop the first syllabus draft. Document analysis is defined as the examination of qualitative data by focusing on patterns within a set of textual or visual material that is designed to help an analyst gain insight into the researcher's hypothesis or question (Bowen, 2009). Document analysis has traditionally been applied to textual data, but over the past decade, many have begun to approach the technique's application to other kinds of materials, including visual, audio, and motion-based media. Following this guidance of analysis, 13 available syllabi were analyzed to obtain the first draft. This draft was the result of extensive reading of the literature and a review of available syllabus documents. Creating a draft from such sources required a substantial amount of time, but this time was well spent as it gave researchers, and students

alike an opportunity to become familiar with the methods by which syllabus documents are developed.

In the second stage, semi-structured interviews were conducted to collect data from experts to revise the first draft and create the last draft before the evaluation phase. Semi-structured interviews are defined as a way of gathering information in an interview setting that involves larger amounts of what is not dialogue. The technique steps back from the traditional question-and-answer format and allows the interviewee to provide responses in their own words, on their own terms (Qu & Dumay, 2011).

According to Longhurst (2003), an interviewer can use this method for two main purposes: to better understand the person they are interviewing or to guide conversations with those with different understanding levels. Ask the interviewee to clarify, summarize, and elaborate on the information provided. In this case, it is appropriate to ask questions such as "What do you mean by that?" or "How do you feel about that?" These questions encourage clarification, and the interviewee will provide a more detailed explanation, which may reveal more about themselves or their story. Hence, the study intends to use semi-structured interviews to acquire data from the experts to elaborate in-depth on their knowledge in designing the proposed syllabus. An interview will be recorded by handwritten notes and digital audio recording by the researcher during the data collection procedure.

In the following stages of development and evaluation, close-ended and open-ended questionnaires were used to collect data from the participants, whether experts or students. Questionnaires were distributed to experts' evaluations as well as students after receiving the training course. Questionnaires were distributed to expert's interviews and expert's evaluation as well as students after receiving the training course. The data was transcribed and stored in more than one place for privacy and protection.

3.9 Data Analysis

The approach to the analysis of the data in this study considers issues related to a mixed-methods methodology. A summary of the approach and its relationship to the literature is given below.

3.9.1 Approach to data analysis

There is no one-size-fits-all approach to qualitative data analysis (Punch, 2013); rather, each study's way of analyzing qualitative data is unique, refined, and coordinated (Miles & Huberman, 1994). It is critical that the analysis process is applied consistently and systematically and that it can be communicated easily. Punch (2013) asserts that data analysis methods must be rigorous, disciplined, observable, and understandable. There are some approaches that are commonly used in qualitative research analysis, even though each study's data analysis will be unique. Preparation and organization of data, reduction of the data into themes through coding and condensing codes, and presentation of data in figures, tables, and discussions are among them (Creswell & Poth, 2016). Akin to what Merriam (1998) calls the process of consolidating, reducing, and interpreting data.

Using the general strategies for qualitative inquiry reported in the literature, Creswell and Poth (2016) have constructed a spiral model outlining a generic approach to data analysis. The spiral starts with data collection, then moves on to data administration, reading and taking notes, describing classification and interpretation, and representation and visualization. According to Creswell and Poth (2016), qualitative researchers move in analytical circles rather than using a fixed linear approach. The data analysis methods used in this study are based on Creswell and Poth's (2016) data analysis and representation stages. Table 4 presents the data analysis techniques and how they were applied in this study.

3.9.2 Descriptive statistics

Apart from the above, descriptive statistics to analyze the "yes or no" questions were applied. A descriptive statistic merely describes a data set, whereas an inferential statistic tries to conclude the population the sample represents (Johannesson & Perjons, 2014). The use of descriptive statistics, as in frequency counts analysis, may seem controversial, but several scholars advocate the use of descriptive statistics to provide generalizability to qualitative research within the study, or as Maxwell (2010) termed it, the internal generalizability of qualitative results. Qualitative research relies heavily on internal generalizability; the validity of results relies on their internal generalizability to the case or a collection of participants as a whole. As a result, Maxwell (2010) stated that the

presentation of statistical data about the frequency of observations, or the occurrence of a particular type of event or statement, can resolve possible challenges associated with these outcomes. Quantitative data also assist researchers in supporting their analyses adequately and refuting counterclaims that they have cherry-picked data that support their interpretation. According to Sandelowski (2001), numerical data allow a researcher to examine and defend inherently quantitative claims and evaluate the amount of evidence the numbers provide for a certain conclusion.

Table (4): Data analysis techniques in the current study

Technique	For documents and experts interviews	How technique applied in this study
Managing the data	Create and organize files for data	Data management structure developed to store digital information. An alternative hard drive is used to backup digital files. As needed, participant artifacts will be converted to digital form. Transcription of interview audio recordings
Reading and memoing	Create initial codes by reading the text, making margin notes, and making margin notes	The data files were examined multiple times. We printed out the files and added marginal notes as we read them. As part of the analysis process, notes were kept in the researcher's notepad. Recording the initial ideas for coding
Classifying	Create themes or patterns by categorizing data (drawing meaning from multiple instances)	The interview transcripts and documents were read repeatedly and across the responses of 5 experts in order to identify reoccurring themes and patterns. For consistency in coding, the participant and documents generated themes were cross-referenced with other experts' artefacts.

Interpreting	Developing naturalistic generalizations	Data observations are made in a generalized way that can help people apply the findings to other situations or to learn from the research.
Representations and visualizations	A narrative, tables, and figures should be used to present a comprehensive picture of the findings	An analysis of the results is presented in detail and in a coherent fashion. Figures and tables used to explain the findings of the analysis

3.10 Trustworthiness of the Study

Lincoln and Guba (1985) proposed four criteria to enhance data trustworthiness: transferability, credibility, confirmability, and dependability. These four criteria were applied to the data collection and analysis process.

Credibility describes the level of trustworthiness that can be placed in a study's conclusions. In order to ensure credibility, field notes, reflective notebooks, and verbatim transcripts were collected. A pilot interview protocol was tested in two induction meetings and one to two pilot meetings. The researcher has extensive courses relevant to the appropriate graphic design to ensure that she has the required knowledge and abilities. In the research office, all field notes were analyzed and stored.

Transferability refers to the ability of qualitative research results to be adapted to other contexts and settings. As a result of the in-depth nature of the interviews, transferability was facilitated. The researcher provided data descriptions, which described the setting, sample size, sampling strategy, demographic, socioeconomic, inclusion and exclusion criteria, interview techniques, subjects, and extracts from the interview guide, ensuring transferability.

The degree to which other researchers can confirm the conclusions of a research study is called confirmability. For confirmation, seven of the participants were asked to examine their transcripts and make any changes necessary. In addition, the research team planned to meet and discuss each theme several times until everyone was satisfied with the results. Additionally, data were collected from two groups of participants, allowing the study to be triangulated.

Consistency and reliability are determined by how well the findings meet the requirements

for consistency and reliability, as well as the degree of documentation. Detailed drafts of the protocol were developed during the investigation, and we assessed the research coding accuracy and interceder reliability.

Apart from the above procedures, methodological triangulation design, which is a commonly used technique in qualitative research to compare three or more methods or theories, was applied. In the current study, this was achieved by mixing several viewpoints from students and experts and using multiple data sources, participant validation, and the study procedure, which all helped improve the research's validity and reliability.

3.11 Summary

The current study aims to propose a new syllabus for the graphic design field experimental syllabus for teaching user interfaces mobile apps with a modern measurable learning procedure. To this end, this chapter shows the research design that suits this kind of study. As such, the methodological approach of Design-Based Research and nested mixed-method were selected. This implies that the current study was passed through several cycles to develop and evaluate the effectiveness of the proposed syllabus. A mix of data analysis, including thematic analysis of documents and expert interviews, was conducted to develop the syllabus. In contrast, descriptive statistics were used to evaluate the syllabus using statical measures with different criteria. Ultimately, the ethics standards and trustworthiness were presented in this chapter.

CHAPTER 4
ANALYSIS AND RESULTS

4.1 Introduction

The purpose of this chapter is to present the results of different stages of the empirical investigation conducted to verify the problem in the current study. This includes experts' perceptions surrounding the first draft of the syllabus, student evaluations, and the final experts' evaluation after the syllabus was tested on real students. The analysis includes all relevant information about experts and students as well as descriptive and narrative analyses of their perceptions and evaluations of the syllabus. Lastly, a summary of the chapter is presented.

4.2 Problem Identification

In this pilot study, Jordanians (academic designers) who have graduated from four private universities in visual communication design and multimedia design (Middle East University, Philadelphia University, Al-Zaytoonah University, and Applied Science University) were interviewed in order to collect data on the research problem. It was intended to reach 73 students who could identify gaps and actual problems in the syllabus.

The pilot study included 73 students from four private universities: 27 students (37%) from Philadelphia University, 23 students (31.5%) from AL-Zaytoonah University, 14 students (19.2%) from Applied Science University, and 9 students (12.3%) from Middle East University.

It was shared on social media platforms and Jordanian graphic design social groups to reach a targeted sample. A total of 51 females (69.9%) and 22 males (30.1%) were included in the sample. The majority of the participants were in the age range of 21 to 30 years (41%) and 31 to 40 years (27%), with only one participant below 20 years and 4 participants above 41 years. In terms of educational level, the majority of participants were pursuing bachelor's degrees (79.5%), 13.7% were pursuing master's degrees, and only 6.8% were pursuing PhDs. Table 5 presents the demographic information of the participants.

Table (5): Participants' information on a pilot study

	Frequency	Percent
Gender		
Male	22	30.1%
Female	51	69.9%
Total	73	
Age		
under 20	1	1.4%
21-30	41	56.2%
31-40	27	37%
41-50	4	5.5%
51-60	0	0%
Total	73	
Bachelor's University name		
Al-Zaytoonah University	23	31.5%
Middle East University	9	12.3%
Philadelphia University	27	37%
Applied Science University	14	19.2%
Total	73	
Bachelor's Major		
Visual communication Design	69	94.5%
Multimedia Design	4	5.5%
Total	73	
Level of current education:		
Bachelors	58	79.5%
Masters	10	13.7%
PhD	5	6.8%
Total	73	

The pilot study is intended to illustrate the practical problems faced by students in Jordan during their current UI design syllabus. Questions were asked to demonstrate the need for a new syllabus that addresses existing knowledge and skills limitations. These questions are summarized as follows;

1. The availability of specialized academic courses on UI design or UI mobile apps during bachelor degrees, as there is a misconception between specialized UI mobile apps and general UI design. As a result, we need to measure each of them individually
2. The availability of non-academic courses on designing mobile apps with UI.
3. A need for theoretical and practical training programs in the design of mobile apps with an emphasis on user interfaces.
4. If they prefer face-to-face or online courses, then we can decide whether to do it online or in person.

When were they asked if they studied any courses related to User Interface design - UI Mobile app design or Both? The majority of them answered (42 students 57.5%) did not study any of the previously mentioned topics, 21 students (28.8%) studied UI Mobile app design, 10 students (13.7%) studied UI Mobile app design that included a section for designing UI Mobile design, and no one studied UI Mobile app design specialized courses. In other words, this specialty is not taught separately and is taught as part of UI design. This emphasizes the uniqueness of this training program and the need to develop a new syllabus.

Students were asked to evaluate the trainers who delivered the courses, and 31 answered the question. The satisfaction results were as follows: 9 students (29%) gave excellent, 12 students (38.7%) gave very good, 8 students (25.8%) gave good, one student (3.2%) gave fair, and one student (3.2%) gave poor.

As for general satisfaction with the course, 6 students (19.4%) gave excellent ratings, 14 students (54.2%) gave very good ratings, 10 students (32.3%) gave good ratings, and one student (3.2%) gave poor ratings.

On the question of free, ready-to-use materials, 18 students (58.1%) answered that the course includes them, 11 students (35.5%) answered that it does not, and 2 students (6.5%) answered that they are not sure.

On the final project question: Did you make a real final project after the course you take? 28 students (90.3%) answered yes, 2 students (6.3%) answered no, and one student (3.2%) answered I do not know.

The answers given to the question about the sufficiency of courses for entering the marketplace were no by 24 students (77.4%), yes by 4 students (12.9%), and I am not certain by 3 students (9.7%).

When asked whether they had gained promotion due to their knowledge of this specialization, 17 students (54.8%) answered no, 12 (38.7%) answered yes, and 2 (6.5%) answered they did not know.

When asked if the time was appropriate for the amount of information in the course, 17 students (54.8%) answered no, 12 students (38.7%) answered yes, and 2 students (6.5%) answered I do not know.

Therefore, students' satisfaction with the university's educational materials and with their lecturers was varied and positive. It was enough to enter the working market or to get a promotion or a new job with the university's educational materials. The university's educational materials include a final project and ready-to-use materials. Furthermore, the educational material included in the syllabus did not cover enough material to enter the market.

This indicates a positive opinion of the trainers in general, though it is important to note that a few students gave lower ratings. This suggests that further improvement is needed in the training program, such as introducing more specialized courses or creating more interactive activities. In conclusion, this survey has demonstrated that most students have not studied UI Mobile app design as a separate topic, and the trainers received generally positive feedback from the students. This indicates a need to develop new syllabi specific to this area and suggests ways to improve the existing program.

Students were asked in the second section if they were losing any job opportunities due to a lack of knowledge in this area. There were 42 students who answered this question (57.5%). There are 22 students (52.4%) who answer yes, 14 students (33.3%) who answer no, and 6 students (14.3%) who answer I do not know. Consequently, the chances of getting a job in the job market were low due to the lack of suitable educational materials. Furthermore, 24 out of 31 students who joined courses with related subjects said the educational materials were insufficient for entry into the market. This indicates that educational materials are lacking and not enough to get students into the job market. The lack of adequate educational materials affects the students' opportunities for getting a job, as many employers require applicants to possess a certain amount of knowledge and skills in that specific field. This makes it difficult for students without proper educational materials to compete with other applicants and gain employment. Additionally, the lack of appropriate educational materials can prevent students from understanding the industry and the current trends, making it even more difficult for them to find jobs.

In the next section, they were asked whether they had studied any non-academic courses about UI Mobile app design, whether they were free or paid, local or international. Afterwards, they were asked if they would be interested in a training program specializing in UI for mobile apps.

In total, 69 students (94.5%) answered the first question as they did not attend any training, while 4 students (5.5%) joined. This indicates that either the students are unwilling or there are no educational materials. Meanwhile, there were 73 students who answered the second question, of which 67 (92%) were interested in participating in the program. A high percentage shows the program's potential, as well as the students' interest in joining the program. As a result, the problem lies in a lack of educational materials in this field, which confirms the gameness of the training program idea.

Lastly, they were asked if they preferred the training program to be face-to-face or online; 26 students (38.8%) preferred to get the training online, 24 students (35.8%) preferred it face-to-face, while 17 students (25.4%) showed no difference. For this reason, the training program was done online. The results of this survey indicate that, while there is still a strong preference for face-to-face training, an increasing number of students are open to the idea of receiving training online. This trend could be attributed to the increasing prevalence and convenience of online learning, as well as the difficulty of attending face-to-face training sessions during times of social distancing.

Table (6): A descriptive evaluation of pilot study

1. Did you study any specialized academic course on		
	Frequency	Percent
User Interface design	21	28.8%
UI Mobile app design	0	0%
Both of them UI and UI mobile app design	10	13.7%
None of them	42	57.5%
Total	73	
Yes. I study		
1. What is your **evaluation of the trainer**		
	Frequency	Percent
Excellence	9	29%
Very Good	12	38.7%
Good	8	25.8%
Fair	1	3.2%
Poor	1	3.2%
Total	31	
2. What is your **evaluation of the course**		
	Frequency	Percent
Excellence	6	19.4%
Very Good	14	45.2%
Good	10	32.3%
Fair	0	0%
Poor	1	3.2%
Total	31	
3. Did you make a **real final project** after the course you take?		
	Frequency	Percent
Yes	28	90.3%
No	2	6.5%
Maybe	1	3.2%
Total	31	
4. Did the course you take contain **a ready to use free material** to facilitate the design process?		
	Frequency	Percent
Yes	18	58.1%
No	11	35.5%
Maybe	2	6.5%
Total	31	
5. Do you think that the course was enough to **enter the working market** in this specialization?		
	Frequency	Percent
Yes	4	12.9%
No	24	77.4%
Maybe	3	9.7%

Total	31	
6. Did you **get a job or promotion** due to your knowledge in this course?		
	Frequency	Percent
Yes	12	38.7%
No	17	54.8%
Maybe	2	6.5%
Total	31	
7. Is the **time** suitable for the size of information in the course you take?		
	Frequency	Percent
Yes	12	38.7%
No	17	54.8%
Maybe	2	6.5%
Total	31	
No. I don't study		
1. Did you **lose a job** or promotion due to your lack of knowledge in this course?		
Yes	22	52.4%
No	14	33.3%
Maybe	6	14.3%
Total	42	
2. Did you study any (non- academic)- (free or payed)- (local or international) course on UI Mobile app design?		
	Frequency	Percent
Yes	4	5.5%
No	69	94.5%
Total	73	
3. Are you interested in an intensive theoretical and practical training program specialized in UI mobile app design?		
	Frequency	Percent
Yes	67	91.8%
No	6	8.2%
Total	73	
4. Do you prefer the training program to be face-to-face or online?		
	Frequency	Percent
Online	26	38.8%
Face to face	24	35.8%
No difference	17	25.4%
Total	67	

4.3 The first draft syllabus development (Cycle One)

In this stage, the 13 most prominent syllabi from all over the world were analyzed to extract the first draft, as we mentioned in chapter three (see appendix B). In this phase, a syllabus is designed that follows all previous syllabuses. An analysis of qualitative documents was conducted (document analysis) as a result of this analysis, and using a

grouping method to select the most suitable content that aligns with the current study aim and theoretical foundation. Therefore, we choose the most appropriate parts from each syllabus to use, edit or develop for the new specialized syllabus.

To finalize our grouping and development of the first draft, the following criteria were applied;

1- The syllabus should be a mix of theoretical and practical together.
2- The syllabus should contain lessons to teach design programs such as Adobe XD.
3- The syllabus should export a final project to be a productive syllabus.
4- The syllabus should give students the skill to present their work in a professional way.
5- The syllabus should teach UI rules and graphical user interfaces from a design perspective.
6- The syllabus should allow students to think critically when they see UI screens and evaluate their work by themselves.
7- The syllabus should be in line with the market industry and involve collaboration with developers.

Based on the analysis and following the criteria above, the first draft was developed as in Table 7.

Table (7): The first draft syllabus

The first draft syllabus
1. Introduction
• Introduction • What is user interface design? • The relationship between UI and UX • Aesthetics Vs. Functionality
2. UI Process
✓ **Theoretical** • User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don’t

• Types of mobile app • Application categories
✓ **Practical** • Understanding brand platform • Using brand visual identity to define a UI visual style ▪ If visual identity is available: use the brand guidelines ▪ If visual identity is not available: try to make solutions • Understanding types of app screens • Understanding UI elements • Using animation and sound in UI design • UI trends & technology trends that will transform the mobile app industry • Mood board for UI mobile app design • Get inspirations
✓ **Tools** • Prototyping Tools: Adobe Experience Design Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android • Collaboration between Adobe programs • Elaborating the wireframes into page mockups Using Photoshop mockup to present mobile screens
✓ **Publish** • For portfolio • Export graphics for google play and apple store
3. UI case studies & UI best practice
• General best practice UI • Chose an app to study • Using (the UI checklist tool) to evaluate UI mobile app design
4. Final project
• Give the students the requirement for designing the app • Students should use the ready-to-use free material for the portfolio section to present their work • Make live discussions to present all students' projects and review them. After the students have finished.

Despite the fact that all these syllabi are covered the essential components for teaching UI mobile design, there are still some limitations that can be enhanced to produce a more comprehensive outline.

As a result of reviewing the previous syllabus for UI mobile app design:

1. The available courses are not fully specialized for UI Mobile app design; it is usually included as a second section in UX courses or, in general, UI design courses.
2. UI mobile app design courses often present the practical aspect of programming without providing a clear understanding of theoretical concepts.
3. The most available courses about code and programs target programmers more than designers.
4. There is a lack of Arabic content about UI mobile app design.

In conclusion, the current UI mobile app design syllabus is not solid enough to provide practitioners with the necessary knowledge and skills to succeed in the field. This is why it is essential to include more specialized courses and content related to UI mobile app design, focusing on both practical and theoretical aspects. Adding more Arabic content about UI mobile app design will also help to broaden the scope of the field in the Arab world. Finally, it is essential to offer courses tailored for designers and programmers, allowing them to build a solid understanding of UI mobile app design from different angles. Based on these limitations, the need for more refinement to the first draft is essential; thus, the second cycle was conducted as in the next section.

4.4 Experts Interviews (Cycle Two)

In order to conduct expert interviews, we sent the first draft of the syllabus to five designers who specialize in user interface design or syllabus development. It was our goal to review and develop the first draft syllabus developed by the researcher. Interviews were conducted via email and Zoom.

The total number of experts was 5, 3 males (60%) and 2 females (40%). Three of them (60%) have PhD degrees, and two experts (40%) have master's degrees. Regarding their academic ranking, one of the experts was an Assistant Professor at Philadelphia University, the other was an Associated Professor at Al Zaytoonah University's Postgraduate

Department while one of them is a lecturer at Al Zaytoonah University, another is an Associated Professor and supervisor at the Ministry of Education, and the last one is an expert and part-time lecturer. In terms of practical experience, 3 experts (60%) have over 16 years of experience, while 2 experts (40%) have 6-10 years of experience. The complete profile and demographic information are presented in Table 8.

Table (8): Experts' profiles

Code	Gender	Experience	Position and title	Organization
Expert 1	Female	More than 16 years	Assistant Professor & curriculum development Manager	The ministry of education – Jordan
Expert 2	Male	3 years	Assistant Professor	Philadelphia University
Expert 3	Female	7 years	Lecturer	Al Zaytoonah University
Expert 4	Male	More than 16 years	Associate Professor	Al Zaytoonah University
Expert 5	Male	More than 16 years	Lecturer	Al-khawarezmi University

4.4.1 Syllabus and program clarity

Among the first themes from experts was clarity and understanding of the syllabus. According to the participants' answers, there is universal agreement that the first draft is very thorough, clear, and easy to understand.

Particularly, 4 experts (80%) answered that the first draft was excellent, and 2 experts (20%) answered that it was very good. It indicates that titles clearly explain the contents with a few modifications to terminology and emphasis on the need to translate into Arabic.

Regarding this, one of the participants (expert 1) stated,

"I think it is very clear, and I understand the titles. There are no confusing terms or concepts. And I recommend translating the English terms to the Arabic language."

Another participant (expert 2) added,

"It is easy to read and understand. The formatting is good too."

Suggesting that perhaps only a few minor modifications could be made to improve clarity and understanding, these experts feel that this would not significantly impact the overall quality of the syllabus.

Another expert (expert 4) stated that;

"I like the program because it is detailed, comprehensive and specialized."

4.4.2 Syllabus and program arrangement

Similar to clarity and understanding, there was a unanimous agreement on the excellent arrangement of syllabus contents. According to their answers, 3 experts (60%) answered excellent, while 2 experts (40%) answered very good.

There is admiration for the division of the program into theoretical, practical, and applied parts. Each main title was accompanied by a reasonable sequence of subtitles.

The following are excerpts from their positive words;

Expert 3 said;

"The syllabus is well organized, starting with theoretical and ending with practical topics. It's also helpful to have subtitles for each main title, so you know what you're getting into."

Expert 5 said;

"This syllabus is very well organized and easy to follow. The order of the topics is sensible, and it's helpful to have subtitles for each main title. I would only suggest rearranging the order a bit, depending on what students' interests may be."

However, expert 1 gave more comments regarding the arrangement. His proposal was to rephrase some topics so that they would become sentences rather than questions by rearranging the sequence of topics. He also suggested changing some words, such as designing programs to programs and tools. Furthermore, he prefers to write best and worst practices instead of worst and best. In this regard, he said;

"The sequence of topics could be rearranged a bit to make it easier to follow. For example, design programs to programs and tools after understanding the basics of computers. Additionally, some words could be changed, such as worst practices to best practices and designing programs to programs instead of understanding the basics of computers. Overall, this is an excellent syllabus with the potential for improvement in terms of organization."

4.4.3 Applicability of syllabus in Jordanian universities

The first draft syllabus should be evaluated in terms of its relevance to the Jordanian university context. Thus, we asked experts for their opinions regarding its applicability. As per their answers, 4 experts (80%) answered it is excellent, and 2 experts (20%) answered it is very good.

In this interview, several experts supported the idea of applying this program to graphic design university students or other advanced programs for master's students and technical diploma students. But some experts wonder if it can be given to students without previous graphic design training.

In this line, expert 3 said that;

"This syllabus is excellent for graphic design university students and other advanced programs for master's students and technical diploma students."

Another expert (expert 5) said:

"I think that this syllabus can be applied to Jordanian universities. It is comprehensive and covers all the necessary topics. I also think that the program is excellent for graphic design students from the second year onwards. It can be given to Technical Diploma students and Master students as a research study. Another advanced program can be done to be suitable for master level."

4.4.4 Suitability to the marketplace

The first draft syllabus was also evaluated in terms of its suitability for the marketplace. As such, we asked experts about their perceptions regarding the syllabus and its ability to provide the students with the required skills and knowledge to compete in the market. According to interviews, the majority of them agreed that the syllabus has all the required skills and knowledge for students to succeed in the job market.

In this line, 4 experts (80%) answered that the syllabus was excellent, and 2 experts (20%) answered that it was very good. In general, they agreed that the condensed theoretical and practical training program would allow junior designers to enter the job market and pass job interviews. As they gain practical experience and training, they will be able to advance further in their careers.

The following are excerpts from experts' words regarding this question;

For instance, expert 3 said;

"The syllabus is excellent, and it provides junior designers with the required skills and knowledge to compete in the market. It is concise and organized, making it easy to follow. I would recommend that the instructor make use of more practical exercises and case studies, as these will help students learn how to apply theoretical concepts in a real-world setting."

Also, he emphasizes connecting this training program with companies and training centres to improve the practical aspects since the theoretical material in the program is comprehensive and above excellent.

Similarly, expert 4 said;

"I think this syllabus offers junior designers everything they need to enter the job market and pass job interviews. The instructor has done an excellent job of condensing theoretical concepts into a concise, easy-to-follow format. I would only suggest that the instructor use more practical exercises and case studies to help students learn how to apply theoretical concepts in a real-world setting."

4.4.5 Using Adobe XD

The last theme is related to the application of Adobe XD to teach students to design UI mobile apps. In essence, Adobe XD offers an easy-to-understand platform for teaching students to design UI mobile apps. It offers an intuitive drag-and-drop interface that simplifies the process of creating a professional-looking design. Additionally, it provides a wide variety of features, such as the ability to create and customize components, preview designs on multiple devices, and share designs with stakeholders. Based on that, we asked experts about their opinions about using it in the syllabus as a tool to design UI on mobile apps.

As per answers all 5 experts answer that it is excellent. All approve that it is an easy and suitable program in line compatible with Adobe programs that are widely known for students. They added that regardless of the tool used, the most crucial part is the idea that is based on the right theory.

For example, expert 2 stated that;

"Adobe XD is a great tool for designing mobile interfaces. It is an intuitive program that makes it easy to create high-quality designs. However, it's important to have a solid understanding of user experience before using this program."

Similarly, expert 3 said,

"I think Adobe XD is a great program for UI design. It has an easy-to-use interface and allows you to create professional-looking designs quickly."

Similarly, expert 4 stated,

"Adobe XD offers an excellent platform for user interface design. It is easy to use and provides a variety of features, such as the ability to create and customize components. Overall, I think it is a great tool for teaching students how to design mobile interfaces."

In sum, the evaluation of the first draft from all experts was very good, and he praised the features as well as its structure, relevancy, clarity and technicality. Overall, 4 experts (80%) answered it is excellent, and 2 experts (20%) answered it is very good.

They added that the program in its first draft is very promising, keeping in mind the importance of the given notes and suggested modifications. In addition, they are waiting for the end results after applying the training program to evaluate the end practical projects of the students. Table 9 presents the themes and their relevant statistics according to the five experts' evaluation.

Table (9): A descriptive evaluation of experts' evaluation of the first draft

Theme	Evaluation		
Syllabus and program clarity and understanding		Frequency	Percent
	Excellence	4	80%
	Very Good	1	20%
	Good		
	Fair		
	Poor		
Syllabus and program arrangement		Frequency	Percent
	Excellence	3	60%
	Very Good	2	40%
	Good		
	Fair		
	Poor		

Applicability of syllabus in Jordanian universities		Frequency	Percent
	Excellence	4	80%
	Very Good	1	20%
	Good		
	Fair		
	Poor		
Suitability of syllabus to the marketplace		Frequency	Percent
	Excellence	4	80%
	Very Good	1	20%
	Good		
	Fair		
	Poor		
Using Adobe XD		Frequency	Percent
	Excellence	5	100%
	Very Good		
	Good		
	Fair		
	Poor		

Based on experts' comments and evaluation, the final draft was proposed. The revisions for the first draft are presented in Table 10.

Table (10): Revisions of the first draft based on experts' opinions

The first draft syllabus	Notes from Expert
5. Introduction	
• Introduction • ***What is user interface design?*** • The relationship between UI and UX • ~~***Aesthetics Vs. Functionality***~~	• Remove: ~~Aesthetics Vs. Functionality~~ • Add lesson at the end: The Process of Mobile App Designing • Add lesson: User experience design after UI Design • Rename: What is user interface design? To User interface design
6. UI Process	
✓ **Theoretical**	

• User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don't • Types of mobile app • Application categories	
✓ **Practical** • Understanding brand platform • ***Using brand visual identity to define a UI visual style*** ▪ If visual identity is available: use the brand guidelines ▪ If visual identity is not available: try to make solutions • Understanding types of app screens • Understanding UI elements • Using animation and sound in UI design • UI trends & technology trends that will transform the mobile app industry • ***Mood board for UI mobile app design*** • ***Get inspirations***	1. Rename: Using brand visual identity to define a UI visual style to Determine the UI visual style 2. Rearrange: • UI trends & technology trends that will transform the mobile app industry • Mood board for UI mobile app design • Get inspirations To: • UI trends & technology trends that will transform the mobile app industry • Get inspirations • Mood board for UI mobile app design
✓ **Tools** • Prototyping Tools: Adobe Experience Design Introduction – Design – Prototype - Share and export - Design systems - Cloud documents -	

Integrations and plugins - XD for iOS and Android • Collaboration between Adobe programs • Elaborating the wireframes into page mockups • Using Photoshop mockup to present mobile screens	
✓ **Publish** • ***+ For programmer*** • For portfolio • Export graphics for google play and apple store	Add new lesson: + ***For a programmer***
7. UI case studies & UI best practice	
• ***General best practice UI*** • ***Chose an app to study*** • Using (the UI checklist tool) to evaluate UI mobile app design	Convert the lesson from general to more specific: • General best practice UI • Chose an app to study To: • General best practice for medical UI mobile app design • Choosing a medical app to study
8. Final project	
• Give the students the requirement for designing the app • Students should use the ready-to-use free material for the portfolio section to present their work • Make live discussions to present all students' projects and review them. After the students finished	

The clean version of the syllabus is presented in Table 11. (Appendix -K Arabic syllabus at Masaq)

Table (11): Final draft of the syllabus

The Final syllabus
9. Introduction
• User interface design • User experience design • The relationship between UI and UX • The Process of Mobile App Designing
10. UI Process
✓ **Theoretical** • User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don't • Types of mobile app • Application categories
✓ **Practical** • Understanding brand platform • Determine the UI visual style ▪ If visual identity is available: use the brand guidelines ▪ If visual identity is not available: try to make solutions • Understanding types of app screens • Understanding UI elements • Using animation and sound in UI design • UI trends & technology trends that will transform the mobile app industry • Get inspirations • Mood board for UI mobile app design
✓ **Tools** • Prototyping Tools: Adobe Experience Design Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android • Collaboration between Adobe programs

• Elaborating the wireframes into page mockups • Using Photoshop mockup to present mobile screens
✓ **Publish** • For programmer • For portfolio • Export graphics for google play and apple store
11. UI case studies & UI best practice
• General best practice for medical UI mobile app design • Choosing a medical app to study • Using (the UI checklist tool) to evaluate UI mobile app design
12. Final project
• Give the students the requirement for designing the app • Students should use the ready-to-use free material for the portfolio section to present their work • Make live discussions to present all students' projects and review them. After the students finished.

4.5 Student's Evaluation

After finalizing the final draft of the proposal based on comments from the five experts, there is a need to evaluate the final draft based on students in a real-life setting. As such, 50 students from different universities in Jordan were interested in participating in the training program. After communicating with them, 38 students registered on the website for the training program. There were 38 students in the program at the beginning, but only 26 remained at the end. In a survey sent to the 12 students who did not continue, all answered that it was an overload of work and lack of time.

Among the final 26 students, 17 were males (65.4%), and 9 were females (34.6%), representing three Jordanian universities: Al Zaytoonah University (61.5%), Philadelphia University (23%) and Middle East University (4/15.5%).

17 out of 26 students belong to the group of 21-30 years of age, and the remaining 9 students are in the group of 31-40 years of age. In this study, 23 of the students were graduates with a first degree from an academic institution, while 3 students were master's degree holders in graphic design.

In terms of employment status, 15 students (57.7%) were unemployed, and 11 students (42.3%) were employed. Out of the 15 employed students, six (40%) had prior experience between 1 and 5 years, four (26.7%) had prior experience between 6 and 10 years, and one (33.3%) had prior experience between 11 and 15 years. Most students have little to no work experience or no experience at all. Table 12 presents the demographic information of participants.

Table (12): Demographic information of students

Gender			
		Percent	Frequency
	Male	65.4%	17
	Female	34.6%	9
	Total		26
Age			
		Percent	Frequency
	under 20		
	21-30	65.4%	17
	31-40	34.6%	9
	41-50		
	51-60		
	Total		26
Bachelor's University name			
		Percent	Frequency
	Al-Zaytoonah University	61.5%	16
	Middle East University	15.4%	4
	Philadelphia University	23.1%	6
	Applied Science University		
	Total		26
Level of current education			
		Percent	Frequency
	Bachelors	88.5%	23
	Masters	11.5%	3
	PhD		
	Total		26
Employment status			
	Yes	42.3%	11
	No	57.5%	15
	Total		26
Years of experience			
		Percent	Frequency
	1-5	54.5%	6
	6-10	36.4%	4
	11-15	9.1%	1
	16+		
	Total		11

The questions were designed to evaluate different aspects of the training program, which is built on the final draft of the syllabus developed in Cycle 2. In total, 11 relevant questions were asked to students at the end of the training program. For each question, we asked the participants to give a general evaluation along with narrative feedback in case they wanted to elaborate more.

The first question we asked was how this training program would benefit them. There were 20 students (76.9%) who responded it was excellent, four students (15.4%) who responded it was very good, and two students (7.7%) who responded it was good. According to most students, the program was easy to follow, simple, and suitable for beginners. The following are excerpts from their words;

One of the students said,

"It was very easy to follow, and I found the material to be simple and suitable for beginners. I would definitely recommend this program to others."

Another student echoed that when he said;

"I thought the training program was excellent! The material was easy to understand and follow, and it was suitable for both beginner and experienced users alike. I would definitely recommend this program to others."

The second question we asked related to how you evaluate the theoretical knowledge you have gained from this training program. 17 students (65.4%) answered it was excellent, 7 students (26.9%) answered it was very good, and 2 students (7.7%) answered it was good. Most students mention that the theoretical part of the training program was condensed and not boring, unlike other theoretical training materials. The following are excerpts of their answers;

One of the students stated;

"The theoretical knowledge I gained from this training program was excellent. The material was well-organized and easy to follow, and it was suitable for both beginner and experienced users alike. I would definitely recommend this program to others."

Another student elaborated on that and remarked;

"The theoretical knowledge I learned from this training program was very beneficial for my future projects. I was able to apply the concepts I learned in the program to my own

projects and had more success in applying those concepts than I would have without the program."

In contrast to theoretical knowledge, the students were asked about the practical knowledge they had gained from the program. There were 13 students (50%) who rated it as excellent, 11 students (42.3%) who rated it as very good, and 2 students (7.7%) who rated it as good.

In addition to doubling the practical section, students also request extra analytical videos on applications available in app stores. These videos are sent to them while they are working on their final projects by the researcher. Additionally, they said that the additional links were so helpful.

One of the students stated;

"The practical knowledge I learned from this training program was very beneficial for my future projects. I was able to apply the concepts I learned in the program to my own projects and had more success in applying those concepts than I would have without the program."

Another student said;

"The videos were very valuable when I was working on my final project. They provided me with additional information I needed to complete my project. I also learned more about applying theoretical knowledge in a practical setting. This program gave me a better understanding of the application of the concepts I was learning."

In the next question, they were asked to evaluate the trainer. 16 students (61.5%) answered she was excellent, 7 students (26.9%) answered she was very good, and 3 students (11.5%) answered she was good.

They admired the trainer's performance because it was fluent, easy and interesting for the students. In addition to covering all essential aspects, the Arabic language was used throughout. For instance, one of them commented;

'The trainer's ability to capture our attention was impressive. She was able to explain complex topics in a way that was understandable to us. Using her language knowledge, she made the learning experience more enjoyable and engaging. Overall, the trainer was able to provide an effective training experience that was enjoyable and informative."

In the next question, they were asked if they recommend this program to their work colleagues. The majority of students (96.2%) answered yes, while one student (3.8%) answered maybe.

Since no one answered NO, it indicates that students recommend the program. In addition, there are some students who communicated with trainers via email and mobile text, asking whether the training program could be extended or if new students could be accepted, which indicates that students are interested in the program and have already recommended it to others.

In the following question, they were asked if they would take an advanced training program. In total, 25 students (96.2%) answered yes, while one student (3.8%) answered maybe.

In other words, this shows that the students highly appreciated the training program and that an improved and modified version could be highly successful in the future. According to the students, a second, advanced part is needed, and practical training requires cooperation with companies. This was reflected in their answers; for example, one of the students said;

"I believe that the training was very beneficial; however, I would like to see more practical exercises/projects with real-world scenarios.".

Another student said;

"I found the training very beneficial, and I would like to take another advanced course."

These statements show that the students appreciated the training program, learned new things, and wanted more of it.

Upon asking about the allotted time, they said 45 hours in total: 15 hours for theoretical work, 10 hours for practical work, and 20 hours for final projects. A total of 13 students (50%) answered it was excellent, 11 students (42.3%) answered it was very good, and 2 students (7.7%) answered it was good.

In both the theoretical and practical sections, students have a high level of satisfaction at a given time. In the questionnaire given to students, they expressed satisfaction with the short condensed video. They also expressed the need for more videos of this type, even if they are shorter in length. For example, one of the students said;

"I think that the videos were good, but I would have liked more of them. They could be a little bit shorter, so it would be easier to watch them all at once. But overall, they were good."

Their eligibility to enter the marketplace was then assessed based on how effective the training program was. 6 students (23.1%) answered it was excellent, 12 students (46.2%) answered it was very good, and 8 students (30.8%) answered it was good.

Since most answers were very good, then good, and then excellent indicated that the program is on the right track in preparing students for the workplace.

It appears that the training course should be improved in order to help students enter the market through practical training. The researcher will work on this aspect by connecting students with training or voluntary organizations.

For example, during his training program, one student told the researcher he was working with a company in Jordan. A certificate of approval is obtained for the final project, which becomes part of his portfolio after he presents it to his company.

Following this, they asked how they would evaluate the value of the free materials attached. 12 (46.2%) students answered it was excellent, 13 (50%) answered it was very good, and one (3.8%) answered it was good.

This shows that students were satisfied with the free materials required for designing. The free material was also considered a rich, diversified library of carefully selected materials that were useful throughout the training, as well as afterwards. For instance, one of the students remarked that;

"The materials served as a great foundation for my understanding of the design process. I was able to build on the skills I already had and use the information I learned from the free materials to create a successful design. The materials were well suited for my project and proved invaluable for me."

This quote shows that the free materials were found valuable by the students. They yielded positive results in terms of design.

Then they were asked about the benefits of taking the course online. A total of 18 students (69.2%) answered this was excellent, 6 students (23.1%) answered this was very good, and 2 students (7.7%) answered this was good.

There was widespread appreciation among students for the online recording of the course, which made it easier for them to watch it whenever they wanted. One student commented;

"The advantage of taking the course online is that you can do it at your own pace and on your own time. This is very helpful for people who have busy schedules."

The students suggested doing the videos in a similar style to YouTube videos with advanced montage effects. For example, one of the students stated;

"I think it would be really good if the videos were edited like a YouTube video. There could be advanced montage effects and things like that."

The last question was whether they would prefer future training to be face-to-face, online, interactive online, or whether there was no difference. There were 17 students (65.4%) who answered online, 2 students (7.7%) who answered interactive online, 7 students (26.9%) who answered no difference, and zero who answered face-to-face.

In this training program, most students appreciated the recorded online presentation, and they would like to see similar presentations in future training programs.

Table 13 presents the overall quantitative evaluation for each question.

Table (13): Students' quantitative evaluation

How do you evaluate the benefits you have gained from this training program?		Frequency	Percent
	Excellence	20	76.9%
	Very Good	4	15.4%
	Good	2	7.7%
	Fair		
	Poor		
	Total	26	
How do you evaluate the theoretical knowledge you have gained from this training program?		Frequency	Percent
	Excellence	17	65.4%
	Very Good	7	26.9%
	Good	2	7.7%
	Fair		
	Poor		
	Total		
How do you evaluate the practical knowledge you have gained from this training program?		Frequency	Percent
	Excellence	13	50%
	Very Good	11	42.3%
	Good	2	7.7%
	Fair		

	Poor		
	Total		
How do you evaluate the trainer?		Frequency	Percent
	Excellence	16	16.5%
	Very Good	7	26.9%
	Good	3	11.5%
	Fair		
	Poor		
	Total		
Will you advise your workmates in this training program?		Frequency	Percent
	Yes	25	96.2%
	No		
	Maybe	1	3.8%
Will you participate in an extra advanced training program?		Frequency	Percent
	Yes	25	96.2%
	No		
	Maybe	1	3.8%
	Total	26	
How do you evaluate the training program and the allotted time? 45 hours 15 theoretical, 10 practical 20 final projects		Frequency	Percent
	Excellence	13	50%
	Very Good	11	42.3%
	Good	2	7.7%
	Fair		
	Poor		
	Total		
How do you evaluate whether the training program will be high enough to qualify your entrance into the market industry?		Frequency	Percent
	Excellence	6	23.1%
	Very Good	12	46.2%
	Good	8	30.8%
	Fair		
	Poor		
	Total		
How do you evaluate the benefits of attached ready-to-use free material in this training program?		Frequency	Percent
	Excellence	12	46.2%
	Very Good	13	50%
	Good	1	3.8%
	Fair		
	Poor		
	Total		
After you have finished this online training program, how do you evaluate the benefits of taking online courses?		Frequency	Percent
	Excellence	18	69.2%
	Very Good	6	23.1%
	Good	2	7.7%
	Fair		
	Poor		

	Total		
Do you prefer Any future training program to be face-to-face, online, or interactive, or is there no difference?		Frequency	Percent
	Online	17	65.4%
	Interactive online	2	7.7%
	Face to face		
	No difference	7	26.9%
	Total		

Overall, students' evaluation of the program was very positive. This shows that the training program was effective in helping students gain the practical knowledge they need to enter the market. The researcher will work to improve the program further by connecting students with more training opportunities, as well as enhancing their current materials. In addition, the researcher will work to incorporate more advanced editing techniques in the videos to make them more engaging for the students.

A majority of the students found the program to be of great benefit to their design knowledge and skillset. Through the free materials, students were able to gain a better understanding of the design process. Moreover, the students found that taking the course online was advantageous, as it allowed them to complete the course at their own pace. Finally, the majority of students preferred future training to be online, which shows the preference of students in this particular case.

4.6 Expert's Evaluation

The last stage in this study is to evaluate the syllabus from a group of experts to verify its suitability to be applied in universities and other academic institutions. Links to the final projects and Behance were given to the experts after students finished their projects and after the students' evaluations were accomplished. Individual discussions and evaluations of each expert's final project were conducted.

Six male experts and one female participated in the evaluation of the final projects. Three of them possess a PhD, two possess a Master's degree, and the other two possess a Bachelor's degree. Two of the seven work as academic lecturers, two work as professional designers, and two work as lecturers and designers. Experts have experience ranging from 5 to 16+ years. As a result of the diversity of experts and their academic and practical

experiences, the evaluation process was enriched. Table 14 presents the demographic information for the 7 experts involved.

Table (14): Demographic information of experts

Code	Gender	Experience	Position and title	Education level	Organization
Expert 6	Male	8 years	Senior UI/UX Designer & Front-End Developer	Bachelor	Digitinary Company
Expert 7	Male	More than 16 years	Assistant Professor	PhD	Open Arab University
Expert 8	Female	4 years	Assistant Professor	PhD	Philadelphia University
Expert 9	Male	7 years	Lecturer	Master	Al Zaytoonah University
Expert 10	Male	More than 16 years	Associate Professor	PhD	Al Zaytoonah University
Expert 11	Male	12 years	Lecturer	Master	Philadelphia University
Expert 12	Male	13 years	Senior UX-UI Designer	Bachelor	Smarteletec Company

The expert evaluation was divided into two parts: a first part for evaluating each project separately, followed by a second part for evaluating the syllabus through an overall evaluation of all projects.

4.6.1 Single project evaluation

In the first section of the evaluation, the seven experts were given the links to each project, and they were asked about their opinions. (see appendix -L final projects)

Pre-developed questions guided the evaluation are divided into three themes; general evaluation, applying the brand identity to UI screens and designing Behance presentation for the app.

The first project (Eren App) received a good evaluation, as illustrated in Table 15.

Table (15): Eren App experts' evaluation

Criteria	Evaluation
General evaluation	
Applying the brand identity to UI screens	
Designing Behance presentation for the app	

	Frequency	Percent
Excellence	4	%57.1
Very Good	3	%42.9
Good		
Fair		
Poor		

	Frequency	Percent
Excellence	4	%57.1
Very Good	3	%42.9
Good		
Fair		
Poor		

	Frequency	Percent
Excellence	4	%57.1
Very Good	3	%42.9
Good		
Fair		
Poor		

In contrast, the second project (Anime sword) received a good evaluation, as presented in Table 16.

Table (16): Anime Sword experts' evaluations

Criteria	Evaluation	
General evaluation		
Applying the brand identity to UI screens		
Designing Behance presentation for the app		

	Frequency	Percent
Excellence	3	42.9%
Very Good	3	42.9%
Good	1	14.3%
Fair		
Poor		

	Frequency	Percent
Excellence	4	57.1%
Very Good	1	14.3%
Good	2	28.6%
Fair		
Poor		

	Frequency	Percent
Excellence	2	28.6%
Very Good	4	57.1%
Good	1	14.3%
Fair		
Poor		

The third project (Visit Jordan) also received a good evaluation from experts, as shown in Table 17.

Table (17): Visit Jordan experts' evaluations

Criteria	Evaluation		
General evaluation		Frequency	Percent
	Excellence	1	14.3%
	Very Good	2	28.6%
	Good	4	57.1%
	Fair		
	Poor		
Applying the brand identity to UI screens		Frequency	Percent
	Excellence	2	57.1%
	Very Good	1	14.3%
	Good	4	28.6%
	Fair		
	Poor		
Designing Behance presentation for the app		Frequency	Percent
	Excellence	1	14.3%
	Very Good	3	42.9%
	Good	3	42.9%
	Fair		
	Poor		

Similarly, the last project (Cimodrama) received a good evaluation as well as presented in Table 18.

Table (18): Cimodrama experts' evaluations

Criteria	Evaluation		
General evaluation		Frequency	Percent
	Excellence	2	28.6%
	Very Good	1	14.3%
	Good	4	57.1%
	Fair		
	Poor		
Applying the brand identity to UI screens		Frequency	Percent
	Excellence	1	14.3%
	Very Good	3	42.9%
	Good	3	42.9%
	Fair		
	Poor		
Designing Behance presentation for the app		Frequency	Percent
	Excellence	1	14.3%

	Very Good	3	42.9%
	Good	3	42.9%
	Fair		
	Poor		

Overall, two of the projects were based on new ideas chosen by the students, while the other two were redesigned applications.

Based on the above descriptive statistics, we can conclude that the experts were generally satisfied with the projects developed after the students completed the course offered based on the developed syllabus. Based on the answers, we can note that the first two projects were highly evaluated compared with the last two projects. According to experts, redesigning projects requires more experience. In the future, it is recommended that students make new project designs with new design identities and correct user experiences. Project redesigns can be postponed to a later stage.

With regard to Behance's presentations, they commented that this part needs more reading and experience to inspire a higher level of design.

In addition, they added that if some design elements in the projects do not appear proportional to each other, it might be due to designing on a computer screen. Therefore, the elements do not appear as they would on a mobile device. They recommended that this problem can be solved by adding to the training program how to download and use Adobe XD on mobile. As a result, students will be able to view the designed elements proportionately to each other on the mobile screen.

Additionally, the students did not design the entire project using the ready-to-use material, so it would be better if they adhered to the recommended sizes of each app store in the future.

Moreover, they declared that problems with user experience indirectly negatively impact the final results of the project. In the two redesigned projects, this was evident. Ideally, they advocated that we should first provide students with the basic knowledge of user experience when developing mobile apps in order to guarantee the integration of UI and UX.

Furthermore, as an alternative proposal, they stated that we can test the user experience with experts before starting the design of the UI.

Apart from the above, they recommended providing students with a prerequisite course in visual identity and its implementation in UI mobile apps to help students to overcome the problem of old designs that do not have a clear good visual identity. This prerequisite course was fundamental in the redesigned projects.

Lastly, they suggested that more training time is needed for higher-level courses.

4.6.2 Evaluation of the overall syllabus through projects

The last step is to evaluate the syllabus through the overall evaluation of projects. To this end, we asked experts several questions as follows;

First, we asked them to generally assess the syllabus based on projects received from students who participated in the program. In sum, 4 experts (57.1%) answered it was excellent, and 3 experts (42.9%) answered it was very good. Experts' answers ranged from excellent to very good, indicating that they were satisfied with the results presented by students' final projects.

Our next question revolved around whether the students would be able to qualify for the market after completing the training program. In total, 2 experts (28.6%) said it was excellent, and 5 experts said it was very good.

In the opinion of some experts, students without any previous experience had excellent results and were able to gain access to the market as a result. In addition, they recommended adding more practical training to the future advanced version of the program. In addition, they suggested cooperating with training companies.

Our next question was whether we should recommend this training program to universities. In total, 6 experts (85.7%) rated it as excellent, and one (14.3%) said it was very good. Overall, experts recommended that graphic design students use the training program as an educational resource as part of their study plan.

We then asked them about the training program and the allocated time, which is 45 hours in total, 15 for the theoretical part, 10 for the practical part, and 20 for the final project. In total, 5 experts (71.4%) rated it as excellent, and 2 experts (28.6%) rated it as very good.

A high percentage of satisfaction indicates that both theoretical and practical training is suitable for delivering acceptable final projects. In general, computer training programs

usually emphasize only the practical aspects of computer programs, ignoring relevant academic theory. Moreover, ready-to-use materials and related books and links are helpful for improving students' level of comfort.

Lastly, we asked them how they evaluated the acceptance of the training program. The seven experts gave excellent answers, and they all agreed that the program has a great deal of potential.

The summary of their evaluation for each part is presented in Table 19.

Table (19): Experts' general evaluation of the syllabus

General questions	Evaluation		
How do you evaluate all the final projects in general?		Frequency	Percent
	Excellence	4	57.1%
	Very Good	3	42.9%
	Good		
	Fair		
	Poor		
How do you evaluate the student level after the training program is high enough to qualify for their entrance into the market industry?		Frequency	Percent
	Excellence	2	28.6%
	Very Good	5	71.4%
	Good		
	Fair		
	Poor		
How do you evaluate the benefits of implementing this training program at universities?		Frequency	Percent
	Excellence	6	85.7%
	Very Good	1	14.3%
	Good		
	Fair		
	Poor		
How do you evaluate the training program and the time allotted? 45 hours 15 theoretical 10 practical 20 final projects		Frequency	Percent
	Excellence	5	71.4%
	Very Good	2	28.6%
	Good		
	Fair		
	Poor		
How do you evaluate the training program's acceptance after evaluating the final project?		Frequency	Percent
	Excellence	7	100%

	Very Good		
	Good		
	Fair		
	Poor		

In conclusion, the syllabus has received a very good evaluation from both experts and students. After considering their notes, the final version of the syllabus is presented in Table 20.

Table (20): The final syllabus

The final syllabus after experts' & students' notes
1. Introduction
• User interface design • User experience design • The relationship between UI and UX • The Process of Mobile App Designing
2. UI Process
✓ **Theoretical** • User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don't • Types of mobile app • Application categories
✓ **Practical** • Understanding brand platform • Determine the UI visual style ▪ If visual identity is available: use the brand guidelines ▪ If visual identity is not available: try to make solutions • Understanding types of app screens • Understanding UI elements • Using animation and sound in UI design • UI trends & technology trends that will transform the mobile app industry

• Get inspirations • Mood board for UI mobile app design
✓ ***Analytical (adding new section)*** • ***Choosing groups of real apps from the store in one category*** • ***Recording analytical videos for the selected app and sending them to the students*** • ***Making analytical dissection with students***
✓ **Tools** • Prototyping Tools: Adobe Experience Design Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android • ***Using Adobe XD App for mobile (adding new topic)*** • Collaboration between Adobe programs • Elaborating the wireframes into page mockups • Using Photoshop mockup to present mobile screens
✓ **Publish** • For programmer • For portfolio ***(Review more real successful projects & make analytical study for featured projects on Behance website or dribble website)-(adding more information)*** • Export graphics for google play and apple store
3. UI case studies & UI best practice
• General best practice for medical UI mobile app design • Choosing a medical app to study • Using (the UI checklist tool) to evaluate UI mobile app design
4. Final project
• Give the students the requirement for designing the app ***(At this stage, the chosen projects should be new, not redesign projects also should be studied from a UX perspective)*** • Students should use the ready-to-use free material for the portfolio section to present their work

- Make live discussions to present all students' projects and review them. After the students finished.

4.7 Chapter Summary

In this chapter, we analyze the different stages of syllabus development. In the first part, we analyzed the need for this syllabus in Jordanian universities. Our study of a variety of students revealed that there is a critical need for this syllabus. This is because no special UI mobile app design courses are offered, and this kind of specialization is in demand on the market. In the second part, the first draft of the syllabus was proposed based on the content analysis of 13 documents (syllabi) from various prominent sites. After this, the first draft was amended by including the opinions of 5 experts to create the final draft of the syllabus. We evaluated the final draft based on the perceptions of students and experts in the last two parts. The final draft received a very good evaluation in both evaluations, indicating its potential to be applied in Jordanian universities.

CHAPTER 5

THE PROPOSED SYLLABUS

5.1 About the syllabus

- **Syllabus philosophy**

  The syllabus is designed especially for visual communication design students, taking into consideration the theoretical and practical knowledge side by side. In addition, it is designed to be in line with the market industry. Therefore, each student will have a final project presented on Behance and will be ready to work directly after finishing the course. Our main purpose is to facilitate the design process through ready-to-use free materials, which are designed and collected especially for students. Furthermore, we do not miss the relationship between designer and programmer. Therefore, we add a special part called (publish for the programmer) in the publish section.

- **Course objectives**
  - ✓ Understanding UI mobile app theoretical and practical
  - ✓ Facilitate the design process through ready-to-use free materials
  - ✓ Improve the communication between designers and developers through publish part
  - ✓ Easily work with Adobe XD to design the app screen
  - ✓ Using critical thinking not only after you design the screens but also before you design through practicing that in case study part and check list tool
  - ✓ Prepare learners to be ready to work because the course is design to be in line with industry requirements

- **Course outcome**

  Students will have a proper understanding of UI mobile app design, which will allow them to build mobile app design in the right way throughout the syllabus. Therefore, they will apply what they learn in the final project not only designing the app screens but also to presenting the screens in a professional way to use it on Behance as online portfolio.

- **Course schedule**

  The course will be both online for lessons and live for dissections.

Time: Total of 45 Hours /8 weeks,15 hours for theoretical lessons,10 hours for practical part and 20 hours for final projects.

5.2 Exclusive development

The below developments are created and designed especially for this course. As a result, this makes the syllabus unique of its kind.

- ✓ **Ready to use free material:**

  We provide the students with all the material they will use during and after finishing the syllabus to facilitate the designing process and to make sure that all sizes are completely right. The free ready to use materials were designed and collected by the researcher.

  - Free design system kit (XD-PSD-AI).
  - Free icons kit.
  - Free English & Arabic font kit.
  - Free color palette kit.
  - Free wireframe kit.
  - Free mobile mockup (PSD).
  - Free presentation mockup designed to present your work on Behance. (AI)
  - Free template for apple store and google play promotion: (AI)
    App icon – Feature images – App images.
  - Free Video template to present your app in stores for (Apple & Android). (AE)
  - Free UI case study checklist tool.
  - Free Google design and apple store material.
  - Free mood board template

- ✓ **Export section:**

  For programmer, for portfolio, for google play and apple store

- ✓ **UI case study:**

  None of the previous syllabus talk about UI case studies, While UX courses talk about UX case studies. As a result, we add this section. After reviewing the general best practice for the medical apps, all students should choose one medical app to study as a case study. Therefore, it will be an interactive discussion lesson

- ✓ **UI case study checklist tool:**

  Creating an evaluation system for a UI mobile app design (checklist) will support the performance of students when they are making a case study for a medical app during the course because they will know the specific standards to evaluate the app accurately. In

addition, it will help them later to evaluate their work by themselves by using the checklist tool, which was developed and designed by the researcher.

- ✓ **Mood board for UI mobile app design:**

  A mood board is a visual representation of a concept design. The idea of mood board is to organize your inspirations at the stage of creating the concept. Therefore, that will organize ideas and will give the designer inspirations to solve any problem. In addition, it gives quick look about what the app will be like. Generally, mood board are more common in fashion design and interior design more than UI mobile app deign. However, in our course we will use it.

- ✓ **Free book related to UI mobile app design**

5.3 The first draft syllabus

The first draft syllabus
1. Introduction
• Introduction • What is user interface design? • The relationship between UI and UX • Aesthetics Vs. Functionality
2. UI Process
✓ **Theoretical** • User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don't • Types of mobile app • Application categories
✓ **Practical** • Understanding brand platform • Using brand visual identity to define a UI visual style ▪ If visual identity is available: use the brand guidelines ▪ If visual identity is not available: try to make solutions

• Understanding types of app screens • Understanding UI elements • Using animation and sound in UI design • UI trends & technology trends that will transform the mobile app industry • Mood board for UI mobile app design • Get inspirations
✓ **Tools** • Prototyping Tools: Adobe Experience Design Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android • Collaboration between Adobe programs • Elaborating the wireframes into page mockups Using Photoshop mockup to present mobile screens
✓ **Publish** • For portfolio • Export graphics for google play and apple store
3. UI case studies & UI best practice
• General best practice UI • Chose an app to study • Using (the UI checklist tool) to evaluate UI mobile app design
4. Final project
• Give the students the requirement for designing the app • Students should use the ready-to-use free material for the portfolio section to present their work • Make live discussions to present all students' projects and review them. After the students have finished.

5.4 Revisions of the first draft based on expert's feedback

Revisions of the first draft based on experts' feedback	
The first draft syllabus	**Notes from Expert**
1. Introduction	
• Introduction • ***What is user interface design?*** • The relationship between UI and UX • ~~***Aesthetics Vs. Functionality***~~	• Remove: ~~Aesthetics Vs. Functionality~~ • Add lesson at the end: The Process of Mobile App Designing • Add lesson: User experience design after UI Design • Rename: What is user interface design? To User interface design
2. UI Process	
✓ **Theoretical** • User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don't • Types of mobile app • Application categories	
✓ **Practical** • Understanding brand platform • ***Using brand visual identity to define a UI visual style*** ▪ If visual identity is available: use the brand guidelines ▪ If visual identity is not available: try to make solutions • Understanding types of app screens	3. Rename: Using brand visual identity to define a UI visual style to Determine the UI visual style 4. Rearrange: • UI trends & technology trends that will transform the mobile app industry • Mood board for UI mobile app design • Get inspirations

• Understanding UI elements • Using animation and sound in UI design • UI trends & technology trends that will transform the mobile app industry • ***Mood board for UI mobile app design*** • ***Get inspirations***	To: • UI trends & technology trends that will transform the mobile app industry • Get inspirations • Mood board for UI mobile app design
✓ **Tools** • Prototyping Tools: Adobe Experience Design Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android • Collaboration between Adobe programs • Elaborating the wireframes into page mockups • Using Photoshop mockup to present mobile screens	
✓ **Publish** • **+ *For programmer*** • For portfolio • Export graphics for google play and apple store	Add new lesson: + ***For a programmer***
3. UI case studies & UI best practice	
• ***General best practice UI*** • ***Chose an app to study*** • Using (the UI checklist tool) to evaluate UI mobile app design	Convert the lesson from general to more specific: • General best practice UI • Chose an app to study

	To: • General best practice for medical UI mobile app design • Choosing a medical app to study
4. Final project	
• Give the students the requirement for designing the app • Students should use the ready-to-use free material for the portfolio section to present their work • Make live discussions to present all students' projects and review them. After the students finished	

5.5 The final syllabus

The Final syllabus
1. Introduction
• User interface design • User experience design • The relationship between UI and UX • The Process of Mobile App Designing
2. UI Process
✓ **Theoretical** • User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don’t • Types of mobile app • Application categories
✓ **Practical** • Understanding brand platform

- Determine the UI visual style
  - If visual identity is available: use the brand guidelines
  - If visual identity is not available: try to make solutions
- Understanding types of app screens
- Understanding UI elements
- Using animation and sound in UI design
- UI trends & technology trends that will transform the mobile app industry
- Get inspirations
- Mood board for UI mobile app design

✓ **Tools**

- Prototyping Tools: Adobe Experience Design

Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android

- Collaboration between Adobe programs
- Elaborating the wireframes into page mockups
- Using Photoshop mockup to present mobile screens

✓ **Publish**

- For programmer
- For portfolio
- Export graphics for google play and apple store

3. UI case studies & UI best practice

- General best practice for medical UI mobile app design
- Choosing a medical app to study
- Using (the UI checklist tool) to evaluate UI mobile app design

4. Final project

- Give the students the requirement for designing the app
- Students should use the ready-to-use free material for the portfolio section to present their work
- Make live discussions to present all students' projects and review them. After the students finished.

5.6 The final syllabus after expert's and student's feedback

The final syllabus after experts' & students' feedback
5. Introduction
• User interface design • User experience design • The relationship between UI and UX • The Process of Mobile App Designing
6. UI Process
✓ **Theoretical** • User experience principles • User interface principles • Mobile app design principles • Gestalt principles in UI design • Best practice: Do/Don't • Types of mobile app • Application categories
✓ **Practical** • Understanding brand platform • Determine the UI visual style ▪ If visual identity is available: use the brand guidelines ▪ If visual identity is not available: try to make solutions • Understanding types of app screens • Understanding UI elements • Using animation and sound in UI design • UI trends & technology trends that will transform the mobile app industry • Get inspirations • Mood board for UI mobile app design
✓ ***Analytical (adding new section)*** • ***Choosing groups of real apps from the store in one category*** • ***Recording analytical videos for the selected app and sending them to the students*** • ***Making analytical dissection with students***

✓ **Tools** • Prototyping Tools: Adobe Experience Design Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android • ***Using Adobe XD App for mobile (adding new topic)*** • Collaboration between Adobe programs • Elaborating the wireframes into page mockups • Using Photoshop mockup to present mobile screens
✓ **Publish** • For programmer • For portfolio ***(Review more real successful projects & make analytical study for featured projects on Behance website or dribble website)-(adding more information)*** • Export graphics for google play and apple store
7. UI case studies & UI best practice
• General best practice for medical UI mobile app design • Choosing a medical app to study • Using (the UI checklist tool) to evaluate UI mobile app design
8. Final project
• Give the students the requirement for designing the app ***(At this stage, the chosen projects should be new, not redesign projects also should be studied from a UX perspective)*** • Students should use the ready-to-use free material for the portfolio section to present their work • Make live discussions to present all students' projects and review them. After the students finished.

CHAPTER 6

DISCUSSION AND CONCLUSION

6.1 Introduction

In this chapter, we summarise this study's research findings, theoretical, practical and methodological contributions, potential limitations, and suggested future research in related domains. (See Appendix M- summary of research)

6.2 Problem Identification

The novelty of the current study is based on the need to develop a new syllabus for university students related to UI design for mobile applications. The analysis of the pilot study revealed that there is a lack of specialized courses on UI mobile app design as a part of the bachelor's degree. There is a misunderstanding between the specialized mobile app design and the general UI design, which needs to be measured and differentiated. As such, the pilot study has helped to identify the need for an updated syllabus and relevant teaching materials in order to bridge this gap.

One theory that could support the findings is the Needs Analysis theory (Salehi, Khadivar, Babaee, & Singh, 2015). This theory suggests that before developing a curriculum or educational program, it is important to conduct a thorough analysis of the needs of the learners and society in order to ensure that the program is relevant and addresses current and future needs. The pilot study helped to identify the need for an updated syllabus and relevant teaching materials in order to bridge the gap between the specialized mobile app design and the general UI design. This aligns with the Needs Analysis theory, which emphasizes the importance of identifying and addressing the needs of learners and society in order to develop an effective and relevant curriculum. Needs analysis, according to Iwai et al. (1999), is an approach to identifying information that serves as the basis for developing a curriculum that meets the needs of a particular group of students.

It is also a way of collecting data to identify the gaps in existing materials, as well as the needs of students and society that can be addressed through the curriculum. This data can be used to design an effective syllabus that is tailored to the needs of the learners and

society. The results of the pilot study shed light on the importance of including a course on UI mobile app design as part of the bachelor's degree in UI design.

In addition, this study echoed previous studies that asserted the need to develop a new syllabus for graphic design students that focus on UI design., According to Qur'an and Hussam (2012), most graphic design teachers believe that Jordanian graduates are not industry-ready. It also revealed that Jordanian graphic design curricula have both strengths and weaknesses. Field training courses should be integrated into the core curricula of all Jordanian universities that teach graphic design.

6.3 Summary of research findings

After identifying a research problem to prove the novelty of its contribution, the study fulfilled its objectives as follows.

First objective: Building up a new experimental syllabus for teaching user interface mobile apps with a modern measurable learning procedure.

In the current study, the syllabus was developed based on three different cycles. The first cycle was based on analyzing the 13 most prominent online syllabi, whether from prestigious universities or commercial websites that are well-known for providing relevant courses. (Appendix C-13 Syllabus) This led to the first draft of the syllabus, which contains the major components. Then the second draft was developed based on the opinion of five experts who specialize in user interface design or syllabus development. Based on their opinions and recommendations, the final draft was amended to include the best practices. (chapter 3 methodology - cycle 2 expert's interviews) This final draft covers the most desired components, which take into consideration the theoretical and practical knowledge that the syllabus will deliver to targeted students. The four major components of the syllabus include the following;

1- The introduction: this part includes user interface design, user experience design, the relationship between UI and UX, and the Process of Mobile App Designing.
2- UI process: this part covers theoretical and practical sections as well as tools and publish sections which are the core of the course.
3- UI case studies & UI best practice: this section includes some suggested cases and UI best practices (General best practices for medical UI mobile app design, choosing a

medical app to study, and using (the UI checklist tool) to evaluate UI mobile app design)

4- Final project: this part suggests that at the end of the course, there will be a final project that reflects what the students learned from the course. At this stage, the teacher provides students with the requirement for designing the app whereby Students should use the ready-to-use free material for the portfolio section to present their work as well as make live discussions to present all students' projects and review them after the students finished.

The final draft of the syllabus adheres to the design principles discussed in chapter two. In short, the syllabus has the structure principle. According to this principle, the user interface should be clear and arranged with meaningfulness; however, it can also apply to models that are familiar to users (Constantine & Lockwood, 2001). It also has the simplicity principle, which advocates that simplicity is the key to making applications more appealing and more user-friendly by simplifying tasks for users (Blair-Early & Zender, 2008). In addition, the final draft does not have overwhelming options that may distract the students, which is consistent with visibility principles as advocated by Bhaskar et al. (2011) and Constantine and Lockwood (2001). Additionally, three other principles were considered in developing the syllabus: feedback, tolerance, and reuse (Constantine & Lockwood, 2001). The feedback principle suggests that the user should be aware of the system's state at all times so they can anticipate the next step or take corrective action if needed. Meanwhile, the tolerance principle encourages flexibility and reduce the user's mistakes. Lastly, the reuse principle allows users to use components from previous design solutions instead of building everything from scratch. All these principles are considered in the syllabus to make it easier for students to understand the process and get the most out of the course.

In addition, the final syllabus considers the balance between covering theoretical and practical knowledge to students during the course. This provides students with an understanding of the concepts, as well as a chance to practice what they have learned. Moreover, the syllabus has an effective evaluation system that is consistent with the course requirements and focuses on the evaluation of students' performance on the course's objectives. This evaluation system will help track students' performance and identify any

areas of improvement. Lastly, the syllabus gives students the opportunity to present their projects at the end of the course, which allows them to apply their theoretical knowledge in real-life situations. This design of the syllabus is in line with the theories that inform the syllabus design, such as sociocultural Learning Theory, which postulates both theoretical and practical learning. According to Kirshner et al. (1997), this theory emphasizes that knowledge and action are not separate. Knowledge is valuable when it is applied. As a result, theoretical and practical knowledge are both valuable.

In addition, the rigour of developing the syllabus stemmed from using another theoretical foundation which is the ADDIE Model (Reinbold, 2013). This instructional design model states that the design process should start with analysis, followed by design, development, implementation and evaluation (Nadiyah & Faaizah, 2015). This model was used to structure the syllabus by first identifying the needs of the students and the objectives of the course. This was followed by designing activities that meet the objectives and are appropriate for the students. The development process varied from providing lecture notes, finding sources of information, and creating assessment tasks. The implementation process used the course delivery system, allowing students to access the material and activities online. The evaluation process used a system of formative and summative assessment tools to track the students' progress. Furthermore, the syllabus has been designed to ensure that it is able to accommodate any changes or modifications that may arise. This is to ensure that the course is able to meet the needs of the students and course objectives in the long term.

Apart from the above, the final syllabus also followed the principle of the SAM model of instructional design (Allen & Sites, 2012). This model focuses on the two main elements of motivation and rehearsal. Motivation is addressed by providing students with an engaging course, while rehearsal promotes the application of knowledge and skills. Additionally, the syllabus included topics and activities that were relevant to the student's needs and the course objectives.

Second objective: Evaluating the effectiveness of a new experimental syllabus for teaching user interface mobile app design to students in order to improve it.

After developing the first draft of the syllabus, the syllabus was evaluated by students. Overall, students were very positive about the program (syllabus). Students

gained practical knowledge through the training program, proving the program's effectiveness. It also found that the program was greatly beneficial to the majority of students' design knowledge and skill set. Students learning about the design process was enhanced by the free materials. In addition, students appreciated being able to complete the course at their own pace by taking the course online. In conclusion, the majority of students preferred online training in the future, indicating their preferences. The syllabus was found to be much more effective than the traditional methods. Furthermore, the program helped students gain a better understanding of the mobile app design process, which is essential for the success of their projects. The fact that all participants rated the program favorably is a testament to the fact that experimental syllabuses can be successful and beneficial to students in terms of learning user interface mobile app design.

Ultimately, the evaluation shows that students prefer online delivery in this type of course over face-to-face interaction. This result is contradictory or partially agreed with prior research about the preference of students to take courses either face to face or using a hybrid approach (Beebe, Gurenlian, & Rogo, 2014; Patano et al., 2021; Ramani, 2022). This can allude to the fact that students are more comfortable taking courses online, and it allows them to be more productive in their studies. Moreover, the use of technology in the program was an added benefit, as it enabled students to access the material and practice on their own time. Finally, the lack of physical interaction with the instructor did not seem to hinder the learning process, as some experts have suggested.

Third objective: Evaluating the graphic design student's level in designing UI Mobile App before and after the new experimental syllabus.

We achieved this objective by evaluating the four delivered students' projects separately as well as overall experts' perceptions based on students' projects. According to the experts, the student's final projects presented excellent to very good results, indicating that they were satisfied with them. According to the answers, the first two projects were highly evaluated compared with the last two, and redesigning projects requires more expertise, according to the experts. Additionally, it was found that students should be asked to design new project designs with new design identities and user experiences in the future. It may be necessary to delay redesigning projects until a later stage. Creating better Behance presentations will require experience and more reading.

Furthermore, some design elements might not appear proportional to one another because they were designed on a computer screen, which is not how they appear on mobile devices. Students can solve this problem by learning how to download and use Adobe XD on their mobile devices to view the designed elements proportionally to each other. Also, the students did not use ready-to-use material throughout the whole project, so in the future, it is preferable to ask them to adhere to each store's recommended sizes. In this line, S. M. Johnson (2020) asserted that on the importance of the availability of ready-to-use materials in every training course like a video, working paper, audio or any suitable material depending on the nature of the course

Problems with the user experience indirectly affect the project's final results. Two of the redesigned projects demonstrated this. Ideally, students should first acquire a basic knowledge of the user experience of mobile apps to guarantee the integration of UI & UX.

Overall, the development and evaluation stages are in line with design-based research (F. Wang & Hannafin, 2005). The experimental syllabus showed to be successful and beneficial to students in terms of learning user interface mobile app design, and the student's final project results confirmed it. The evidence gathered revealed that students should be taught the importance of UI & UX integration, along with related topics such as design principles, layout design, typography design, and working with ready-to-use material. In conclusion, this study provides evidence that an experimental syllabus that focuses on user interface mobile app design can be an effective learning tool for graphic design students.

6.4 Contributions

This study contributes to the field in three different ways: theoretically, practically, and methodologically. Additionally, this study contributes to practical fields and interests such as universities, online teaching websites, and freelancers. As a whole, this study provides a valuable means of integrating many disciplines and represents a pluralistic approach to research that is desirable.

6.4.1 Theoretical contribution

The study contributes to the field of curriculum development by using the Needs Analysis theory to identify the needs of learners and society in order to develop an effective and relevant syllabus for UI mobile app design. The study also contributes to the field of UI design by highlighting the importance of differentiating between specialized mobile app design and general UI design and by incorporating best practices from experts in the field into the final syllabus. The study also contributes to the field of education by introducing a new experimental syllabus that uses a modern measurable learning procedure. In addition, it presents a research-based approach to teaching user interface mobile app design that can be used in other contexts. This study provides explanatory knowledge by answering questions of "why" and "how"; it helps to explain why a situation has occurred or why an object behaves as it does. As an example, students who are studying graphic design are performing poorly due to the current syllabus not taking the market into account. This is because they are focusing solely on designing mobile applications without enough attention to user interface design. Furthermore, the findings of this study could be used to inform future research on user interface mobile app design, along with other areas of graphic design.

6.4.2 Practical contribution

This study also offers practical implications. The study provides a practical syllabus that can be used by universities to teach UI mobile app design as a part of the bachelor's degree in UI design, which can help bridge the gap between specialized mobile app design and general UI design. The study also provides a set of best practices for UI mobile app design that can be used by designers and developers in the industry. Furthermore, the results of this study can be applied to other design courses in higher education. Such courses can benefit from the experimental syllabus proposed in this study and the research-based approach to teaching user interface mobile app design it presents. Additionally, the results of this study can be utilized to create more effective and efficient learning materials.

This study can also have practical implications for universities, online teaching websites, and freelancers. By learning the main components of the user interface mobile app design, these users can create more effective and efficient user experiences.

Furthermore, this study can inform how current syllabi and teaching methods should be revised to accommodate the needs of graphic design students best. This study can also provide valuable information to practitioners who are designing user interfaces and mobile apps.

6.4.3 Methodological contribution

The current research contributes to the field of design-based research by using the methodology to design, develop, and evaluate a new syllabus for teaching UI mobile app design. It also provides a clear and detailed description of the design process, including the different stages of the research, the data collection methods, and the analysis and interpretation of the data.

The study contributes to the field of design-based research by using a cyclical design process that allows for iteration and improvement of the syllabus based on feedback from experts and pilot testing.

The study contributes to the field of design-based research by providing an example of how design-based research can be applied to the field of education and curriculum development. The study also shows how design-based research can be used to bridge the gap between theory and practice in the field of UI mobile app design. The study also highlights the importance of involving experts and practitioners in the design process and how it can improve the quality of the final product.

6.5 Limitations and future directions

The study has several limitations that can be addressed in future research. Designing smartphone application interfaces is one of the relatively new fields that are intertwined with the development of technology, making it a constantly evolving and changing specialization. The designer and the teacher must keep up with this development continuously, requiring more effort on both sides. Due to the spread of Coronavirus, which made face-to-face educational methods unworkable, as well as the lack of cooperation from some universities or their lack of time commitment, the program was difficult to implement in Jordanian universities at the start. Therefore, the results of this research may need to be re-evaluated in the future in order to keep up with the changing technologies and students'

needs. Similarly, more research should be conducted on teaching methodology in order to make sure that the syllabus is effective and meets the needs of both students and instructors. In conclusion, this study provides a valuable method of teaching user interface mobile app design that can be beneficial to universities, online teaching websites, and freelancers. This study also shows that there is still much to learn about how best to teach the subject, and it emphasizes the importance of constantly adapting the syllabus to keep up with the changing technology and students' needs.

Future directions:

- Making further additional developments in the program, particularly the practical section
- Enhancing the filming process, making it more YouTube-style and professional
- Making a video where the trainer analyzes and provides detailed constructive criticism on a successful app
- Creating educational content in Arabic for designing UI mobile app
- Gathering all educational material and converting it into a blog or book specializing in UI mobile app design.
- Developing a more specific second course of the program or another research section aimed to cater to the higher education students' needs
- Before enrolling in our training program, students must first complete a user experience-focused training program
- Creating a specialized training course for UI mobile apps mandatory for students without prior design experience
- Developing a simplified training program for UI mobile interface apps aimed at adolescences
- Creating an Arabic-language glossary of the terms used in UI mobile app design

To compare successfulness, it is recommended that the program be completed in person, as this one was delivered online.

6.6 Conclusion

The study identified a gap in specialized courses on UI mobile app design as a part of the bachelor's degree and used the Needs Analysis theory to conduct a thorough analysis of the needs of the learners and society in order to develop an effective and relevant curriculum. The study also found support from previous studies that also highlighted the need to develop a new syllabus for graphic design students that focus on UI design. The research objectives were fulfilled by building a new experimental syllabus for teaching user interface mobile apps with a modern measurable learning procedure, which includes four major components: the introduction, UI process, UI components, and project work. This syllabus was evaluated by the students and experts in the field and showed a positive outcome. It can be concluded that this syllabus is capable of meeting the needs and demands of students, universities, and industry professionals. Moreover, the results of this study can be used to improve existing teaching methods and inform future syllabi. Thus, this study demonstrates that proper education in UI design is necessary to keep up with the rapidly changing digital world.

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Appendix (A)


Research Methodology
Problem identification
Jordanian previous studies about syllabus in Jordan
Pilot Study (73)
METHODS
Population and Sample
Research Design
Research Instrument and Data Collection
Data Analysis
Research Ethics
Syllabus Development (Cycle One)
Review previous syllabus
Summary of the chosen syllabus
Grouping similar feature together
Finalize the required feature for our syllabus
Course syllabus and schedule
First draft syllabus
Syllabus Development (Cycle Two)
Expert interview (5)
The final syllabus
Exclusive development
Building the content of syllabus
Agreement with Masaq Academy to apply the syllabus as training course through them
Apply the course on students
Finish the course and get out with final projects (4)
Syllabus Evaluation
After Applying the syllabus
Standards to evaluate the syllabus & reference for the selected criteria
Expert's Evaluation (7)
(through final projects)
Student's Evaluation (26)
(At the end of the course)

Appendix (B)

Pilot Study Questions

Demographic Data

Note: this information is strictly confidential

- Gender: Male/Female
- Age: under 20 / 21-30 / 31-40 / 41-50 / 51-60
- Bachelor's University name:
  - Al-Zaytoonah University
  - Middle East University
  - Philadelphia University
  - Applied Science University
- Bachelor's Major:
  - Visual communication Design
  - Multimedia Design
- Level of current education:
  - Bachelors
  - Masters
  - PhD

Questions

1. **Did you study any specialized academic course on:**
    - User Interface design
    - UI Mobile app design
    - Both of them UI and UI mobile app design
    - None of them- go to No section then question 2-3-4

    ✓ yes

a) What is your **evaluation of the trainer**? Excellent – very good – good- fair - poor
b) What is your **evaluation of the course**?
c) Did you make a **real final project** after the course you take?
d) Did the course you take contain **a ready to use free material** to facilitate the design process?
e) Do you think that the course was enough to **enter the working market** in this specialization?
f) Did you **get a job or promotion** due to your knowledge in this course?
g) Is the **time** suitable for the size of information in the course you take?

    ✓ No

a) Did you **lose a job** or promotion due to your lack of knowledge in this course?

2. **Did you study any (non- academic)- (free or payed)- (local or international) course on UI Mobile app design?**
    ✓ Yes
    ✓ No

3. **Are you interested in an intensive theoretical and practical training program specialized in UI mobile app design?** Yes – no

4. **Do you prefer the training program to be face-to-face or online?** online – face to face – no deference

Appendix (C)

<table>
<tr><td>Course Name</td><td colspan="3">UI / UX Design Specialization</td></tr>
<tr><td>Details</td><td colspan="3">https://www.coursera.org/learn/visual-elements-user-interface-design#syllabus
• About the course:
There are four Courses in this Specialization
Visual Elements of User Interface Design (16 hours)
UX Design Fundamentals (13 hours)
Web Design: Strategy and Information Architecture (12 hours)
Web Design: Wireframes to Prototypes (41 hours)
• Offers by: California Institute of the Arts
• Instructor: By Michael Worthington & Roman Jaster
• Time: Visual Elements of User Interface Design (16 hours)
• Price: 7-day Free Trial $19 USD per month to continue learning after trial ends.</td></tr>
<tr><td>Syllabus</td><td colspan="3"><table>
<tr><th>Week</th><th>Title</th><th>Content</th></tr>
<tr><td>Week-1</td><td>Course and Specialization Overview</td><td>Introduction to Week 1
Course Introduction
Why Peer Review?
Peer Review Tips
How to apply feedback</td></tr>
<tr><td></td><td>What IS a user interface anyway?</td><td>What is a User Interface?
The Relationship Between UI and UX
Roles in UI/UX
A Brief Historical Overview of Interface Design
Interface Conventions: Theory
Interface Conventions: Application
Template vs Content
Aesthetics & Functionality</td></tr>
<tr><td>Week-2</td><td>Formal Elements of Interface Design</td><td>Introduction to Week 2
Design Before Design
Look and Feel
Language as a design tool
Color and Shape
Imagery
Typography
Icons</td></tr>
<tr><td>Week-3</td><td>Active Elements of Interface Design</td><td>Introduction to Week 3
Static to Active
Functionality
Speed and Style
Composition and Structure
Buttons
Not Buttons
States and Changes</td></tr>
<tr><td>Week-4</td><td>Composing the Elements of Interface Design</td><td>Introduction to Week 4
Invisible Complexity: Making a Whole from Many Parts
Hierarchy of Content
Conventions and Expectations
Structure and Grids
Platforms and Screen Sizes
Putting it All Together: Slice 'n' Dice</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Course Name</td><td colspan="2">UI/UX Design Career Track</td></tr>
<tr><td>Details</td><td colspan="2">https://ddf46429.springboard.com/uploads/resources/1595963729_UI_UX_Design_Career_Track_Syllabus_07_28_2020.pdf
• About the course:
Springboard's UI/UX Design Career Track is designed to train you on job ready UI/UX skills, including core design principles, tools and best practices
• Offers by: Springboard's UI/UX Design Career Track
• Time: UI/UX Design Career Track – 9 months – 700 hours
UX Career Track – 6 months – 350 hours</td></tr>
<tr><td>Syllabus</td><td>Week</td><td>Title</td></tr>
<tr><td></td><td>Foundations of Design</td><td>1. UI and UX Design Roles and the Skills You Need to Land Them 2. UI vs. UX Design 3. Design Tools: Sketch, Figma, and Adobe XD 4. The Core Stages of Design Thinking A. Empathy b. Define c. Ideate d. Prototype e. Test 5. Divergent and Convergent Thinking 6. Brainstorming and Game storming 7. Observational Empathy</td></tr>
<tr><td></td><td>Conducting Research</td><td>1. UX Research Methods and How to Choose the Right One for Your Work A. Generative Research b. Secondary Research c. Competitive Research d. Quantitative Research e. Qualitative Research 2. Competitive Usability Testing 3. Usability Heuristics 4. Research Plans 5. Recruiting Users with Screener Surveys 6. Conducting Interviews 7. Synthesizing Your Research 8. Empathy Mapping 9. Creating Personas 10. Writing Problem Statements 11. Creating Journey Maps 12. Presenting Your Synthesized Research to Stakeholders</td></tr>
<tr><td></td><td>Designing, Ideating, & Information Architecture</td><td>1. Solution Ideation 2. Creating User Stories 3. Information Architecture a. Navigation b. Sitemaps c. User Flows d. Content through Card Sorting</td></tr>
<tr><td></td><td>Foundations of UI Design</td><td>1. Visual Principles a. Balance b. Scale and Proximity c. Alignment d. Visual Hierarchy e. Repetition f. Contrast g. Negative and Implied Space h. Color Theory 2. UI Principles a. Usability Heuristics b. Ease-of-Use c. Consistency d. Progressive Disclosure e. Reducing Cognitive Load f. Information Hierarchy g. Space Distribution h. Discoverability i. Feedback — Error and Success Responses 3. UI Elements 4. UI Patterns 5. Material and iOS Guidelines 6. Interaction Behaviors and Principles 7. Designing for the Different States 8. Understanding Brand Platforms 9. Using Brand Platforms to Define a Product's Visual Style 10. Developing Design Systems 11. Style Guides a. Logo b. Color Palettes c. Fonts d. Grids e. Iconography f. Photography and Imagery</td></tr>
<tr><td></td><td>Sketching & Wireframing</td><td>1. Sketching Principles 2. Sketching Red Routes 3. Guerilla Usability Testing 4. Responsive Design 5. Wireframing 6. Creating Wireflows</td></tr>
<tr><td></td><td>High-Fidelity Design</td><td>1. Inclusive Design and Designing for Accessibility 2. Building High-Fidelity Mockups 3. Designing Efficiently with Tools 4. Interaction Patterns 5. Animation tools 6. Designing animations and interactions</td></tr>
<tr><td></td><td>Prototyping & Testing</td><td>1. Building a Prototype 2. Conducting Usability Tests A. Remote Usability Testing B. Moderated Usability Testing 3. Other Evaluative User Research Methods 4. Synthesizing Test Findings 5. Prototype Iteration</td></tr>
<tr><td></td><td>Communication Best Practices</td><td>1. Collaborating and Communicating with Developers 2. How to Prepare for Handing Off Designs 3. Handoff Tools like Zeplin 4. Presenting Your Work to Different Stakeholders 5. The Components of an Effective Presentation 6. Creating a Case Study 7. Receiving and Giving Feedback 8. Email and In-Person Communication 9. Prioritization and Time Management</td></tr>
</table>

	Special Topics	1. Product Types: Best practices and solutions a. Ecommerce & Browsing b. Social Media & Messaging c. Dashboards & Data Design d. Music & Media e. Business-to-Business and Business-to-Consumer Products 2. The Psychology of Design A. Persuasive Design B. Anticipatory Design C. Gamification and Behavior Changed. Dark Patterns 3. The Business of UX a. The Product Life Cycle b. Working with Constraints c. Competitors and Success Criteria d. Competitive Research
	Career Components	1. Types of UI/UX Roles 2. Job Search Strategies for the UI/UX Industry 3. Building a Network and Using It to Land Interviews 4. Creating a High-Quality Resume, LinkedIn Profile, and Cover Letter 5. Preparing for Technical and Nontechnical Interviews 6. Successful Negotiation 7. Building Your Portfolio
	Building a Portfolio	Refine your case studies and get your work portfolio-ready • Write an engaging bio and create a personal logo • Build your portfolio site • Critique and review your portfolio

Course Name	Mobile Development Platforms & Mobile Design Course Syllabus
Details	https://www.academia.edu/37713597/Mobile_Development_Platforms_and_Mobile_Design_Course_Syllabus • **About the course:** This course is offered through the CIT department at BHCC • **Offers by:** Bunker Hill Community College Online Programs • **Instructor:** Bunker Hill Community College Online Programs
Syllabus	• **Syllabus:** Lesson 1: Intro to Mobile Development Platforms Lesson 2: Introduction to Developing Content &User Centered (UX) Approaches to Mobile Application Design Lesson 3: Web and native applications Lesson 4: Creating an Information Architecture System Design For Mobile Applications Lesson 5: Understanding the User Interface & Creating A Prototype Graphic Lesson 6: Mobile Marketing & Advertising Lesson 7: Mobile App Market Evaluation & Distribution Lesson 8: Mobile Application SWOT Analysis • **Strength point we can take benefit from:** Android and iOS Developer Guidelines Native App vs. Mobile Web App: Which Mobile Strategy Is Right for My Business UI Differences between Android and iOS Android Launch Checklist

Course Name	APP DESIGNTRAINING COURSE
Details	https://www.trainingdragon.co.uk/mobile-web-app-design-course-training • **Offers by:** Training Dragon • **Instructor:** Bunker Hill Community College Online Programs • **Price:** £450
Syllabus	1. **Creating The concept for Mobile web design** iPhone app vs Mobile website 2. **Wireframe for Mobile web design** Create a prototype for your app 3. **Creating a mobile website design** o Dimensions for your Photoshop file o Mobile web design specification o Creating layers o Using mobile website Photoshop templates o Adding Text o Design background o Design Navigation o Creating List views o Creating buttons using Illustrator 4. **Creating a mobile app design** o Dimensions for your Photoshop file o iPhone app specification o Creating layers o Using iPhone Photoshop templates o Adding Text o Design background o Design Navigation o Creating List views o Creating buttons using Illustrator o iPhone app specifications 5. **Producing Assets for Mobile developers** o Slicing images o Slicing buttons o Export formats 6. **Projects in Mobile Design Course** o Project1: Create a mobile web design Project2: Create iPhone app design

Course Name	**Product Design (UI/UX) Bootcamp**
Details	https://designerup.co/product-design-ui-ux-bootcamp • **About the course:** Our program is an immersive, tailored experience designed to give you the knowledge, skills and 1:1 support you need to become a successful UI/UX or Product Designer. • **Offers by:** DesignerUp • **Instructor:** Elizabeth Alli and Eric Alli • **Time:** 3-6 months on average • **Price:** $1497 - $1997
Syllabus	✓ Module 1: Course Introduction ✓ Module 2: How to Think and Communicate ✓ Module 3: UX Research and Design ✓ Module 4: Business and Product Strategy ✓ Module 5: IA and User Interaction Design ✓ Module 6: Design Fundamentals and Branding o Visual design – inspiration and mood board – color – typography – imagery –icons – buttons – logo – layout – composition and grid ✓ Module 7: Usability Principles o 6 principles of interface design o 6 Gestalt principles in UI design o Usability heuristics in UI design ✓ Module 8: User Interface Design ✓ Module 9: Designing the MVP ✓ Module 10: Optimizing your Workflow ✓ Module 11: Capstone / Final Project

Course Name	Introduction to UI Design
Details	https://www.coursera.org/learn/ui-design?specialization=user-interface-design#syllabus • **About the course:** This course is part of the User Interface Design Specialization. • **Offers by:** University of Minnesota • **Time:** 14 hours • **Price:** 7-day Free Trial $49 USD per month to continue learning after trial ends
Syllabus	1. Introduction and Overview o Introductory Panel: UI Design and Why it Matters o Introduction to the Specialization, Courses, and Capstone o User Interface Hall of Fame / Shame5m o Case Study #1: UI Disasters, including GPS fails o Case Study #2: Corporate Value: Citibank ATM o Case Study #3: Microsoft Office 2007 Ribbon o Case Study #4: International Children's Digital Library o Case Study #5: Taxes and Tickets o Case Study #6: AirBnB vs. Couch Surfing 2. UI Design Process o Design Process Introduction o Designing to Address a Problem w/o Solution Ideas o Designing for a known solution direction o Designing to iterate on/improve an existing solution o Common Elements o Usability Engineering and Task-Centered Approaches o Use Cases, Personas, Tasks, and Scenarios o Intro to Design-Centered Approaches o Design-Centered Methods & When They Work Best o Pulling it all Together: Best from Each; Practical Techniques for someone who isn't a trained designer o Assignment Video: Tasks and Scenarios 3. Psychology and Human Factors for User Interface Design o Intro o Fitts' Law o Short- and long-term memory, attention o Perception and visualization, hierarchy o Mistakes, Errors, and Slips o Conceptual models o The Gulf of Execution and the Gulf of Evaluation o Design Principles: Visibility, Feedback, Mappings, Constraints o Interacting beyond individuals (social psychology) o High-Level Models: Distributed Cognition, Activity Theory, Situated Action o Assignment Video: Interface Critiques 4. Psychology and Human Factors 5. Introduction and Overview o Introductory Panel: UI Design and Why it Matters

Course Name	**The complete online video course**
Details	https://learnui.design/ • **About the course:** The Learn UI Design course is chocked full of live video demos. Watch as we generate dozens of layouts, elements, color schemes, and more. From blank canvas to finished design, you will see how the process looks at every step of the way. • **Time:** 30 hours
Syllabus	1. Introductory topics o Introduction to Sketch o Introduction to Figma o Setting Up Your Workspace for UI Design o How to Build Your Design Gut Instinct o Starting a Project: Brand & Goals o Ways to Design Above Your Level o Finding & Using Design Inspiration 2. Fundamentals o Introduction: Analyzing Aesthetics o Alignment o Spacing o Consistency o Sizing o Simplicity o Lighting & Shadows 3. Color 4. typography 5. User interface components o Component Libraries I: Controls o Component Libraries II: States o Vector Illustration o Icon Design o Photography & Imagery o Lists & Tables o Charts & Data Visualizations 6. Digital platforms & paradigms o Responsive UI Design o Designing Multi-State Screens o Accessibility o Overlaying Text on Images o Truncating Text o Mobile: iOS o Mobile: Android/Material Design o Grids 7. Communicating design o Creating a Design Portfolio o Finding Clients o Click-Through Prototyping o Presenting Your Designs o Developer Handoff

	○ Introduction to the Specialization, Courses, and Capstone ○ User Interface Hall of Fame / Shame5m ○ Case Study #1: UI Disasters, including GPS fails ○ Case Study #2: Corporate Value: Citibank ATM ○ Case Study #3: Microsoft Office 2007 Ribbon ○ Case Study #4: International Children's Digital Library ○ Case Study #5: Taxes and Tickets ○ Case Study #6: AirBnB vs. Couch Surfing 6. UI Design Process ○ Design Process Introduction ○ Designing to Address a Problem w/o Solution Ideas ○ Designing for a known solution direction ○ Designing to iterate on/improve an existing solution ○ Common Elements ○ Usability Engineering and Task-Centered Approaches ○ Use Cases, Personas, Tasks, and Scenarios ○ Intro to Design-Centered Approaches ○ Design-Centered Methods & When They Work Best ○ Pulling it all Together: Best from Each; Practical Techniques for someone who isn't a trained designer ○ Assignment Video: Tasks and Scenarios 7. Psychology and Human Factors for User Interface Design ○ Intro ○ Fitts' Law ○ Short- and long-term memory, attention ○ Perception and visualization, hierarchy ○ Mistakes, Errors, and Slips ○ Conceptual models ○ The Gulf of Execution and the Gulf of Evaluation ○ Design Principles: Visibility, Feedback, Mappings, Constraints ○ Interacting beyond individuals (social psychology) ○ High-Level Models: Distributed Cognition, Activity Theory, Situated Action ○ Assignment Video: Interface Critiques 8. Psychology and Human Factors

1. User Experience & Interface Design

https://experiencehaus.com/ux-ui-online-course/

- **About the course:**
  The Learn UI Design course is chocked full of live video demos. Watch as we generate dozens of layouts, elements, color schemes, and more. From blank canvas to finished design, you will see how the process looks at every step of the way.
- **Offers by:** Experience Haus
- **Instructor:** Experience Haus team
- **Time:** 10 weeks
- **Price:** £990

Week 1	Week 2	Week 3	Week 4	Week 5
Module 1 Course Orientation Introduction to Product Design Design Thinking Double Diamond Client Project Brief Discussion **Module 2** User Research Research Methods Case Studies Screener Surveys Prep of User & Stakeholder Interviews	**Module 3** Review of Submitted Homework Co-Creation of Discussion Guides Live Stakeholder Interview Competitor Analysis **Module 4** 4 x Live User Interviews Discussion of findings Co-Creation of Debrief Research Retrospective	**Module 5** Customer Segmentation Archetypes Personas Live Co-Creation of Personas & Empathy Map **Module 6** Task Analysis Experience Mapping	**Module 7** Workshop Clinic Review of User Research findings Mentor Check-ins (Optional)	**Module 8** User Stories Jobs To Be Done Problem Statements Metrics & KPIs **Module 9** Ideation Techniques Live Group Brainstorm Storyboarding Constraints User Flows
Week 6	**Week 7**	**Week 8**	**Week 9**	**Week 10**
Module 10 Introduction to Wireframing Low-to-High Fidelity Prototyping Rapid Prototyping Design Trends **Module 11** Digital Wireframing Grid Layouts & Artboards / Frames Live Design Collaboration in Figma	**Module 12** Typography & Use of Fonts Visual Design Basics & Principles Design Systems Responsive Design **Module 13** Prototyping Preparing for Usability Testing Presentation Preparation Fundamentals of Storytelling	**Module 14** Usability Testing Task Scenarios Instructor Feedback Roadmaps and Prioritisation **Module 15** Usability Testing 4 x Live Usability Tests Feedback Prioritisation	**Module 16** Presentation Clinic Review of Usability Testing Mentor Check-ins (Optional)	**Module 17** Final Presentation Stakeholder Feedback Next Steps **Module 18** Retrospective on the Course Case Studies Review of Industry Portfolios What's Next?

Course Name	**UI Design Program**
Details	https://careerfoundry.com/en/courses/become-a-ui-designer/course-details/ • **About the course:** A learning experience that's as rigorous and in sync with the industry as it is suited to beginners and upskillers alike. • **Offers by:** Careerfoundry • **Instructor:** Careerfoundry team
Syllabus	✓ **Intro to UI Design** • What Is UI? o Understand the role and responsibilities of a UI designer. • Introduction to Your Design Tool o Learn the interface and basic functions of either Sketch or Adobe XD (your choice). • Working with Layers & Shapes o Use shapes and layers in your design tool to create screens for an app. • Point Types & Boolean Operations o Use shapes in your design tool to create icons for an app. • Visual Design Basics o Learn some fundamental principles of visual design and apply them to an app. • Working with Text o Explore text styles and apply them to an app. • Advanced Design Tool Features o Get to know your design tool even better and create a layout to build an app icon. • Pixel Precision o Apply principles of pixel precision to UI elements. • Previewing Your Work o Learn how to use different design preview tools. • Preparing Your Work for Handoff o Get your work ready to handoff to developers. ✓ **UI Immersion** • Introduction to Design Principles Learn design theory, principles, patterns and mediums and use them to design a mobile app from scratch. Here's what you'll learn: o Design Principles & Heuristics o Consistency in Design Patterns o Wireframes o Intro to Grids o Layout Design & Spacing o UI Elements & Hierarchy o Symbols & Iconography o Evoking Emotion in UI o Text & Typography in UI o Using Color in UI o Platforms & Devices • User Experience Design Process Incorporate basic principles of user experience (UX) design to solve UI design problems, then conduct user research and create user personas. Here's what you'll learn:

Course Name	UI Design Program
Details	https://designlab.com/ui-design-course/ • **About the course:** After 4 weeks you'll improve your visual design skills in areas like color and type, learn how to identify and mimic key design patterns, and finish off the course with a high fidelity prototype to show off all your newfound knowledge. • **Offers by:** Design lab • **Time:** 4 weeks • **Price:** $399
Syllabus	• WEEK 1 o Getting Started Start by familiarizing yourself with what UI Design is, where it originates from, and what are some common tools and principles tools that the field relies on. o Interactive Patterns Learn how to recognize common design patterns and best practices for creating your own UI components within a design system. o Brand and Identity Learn how a product's brand affects the design process and how to form your work according to a strict set of style rules. • WEEK 2 o Visual Hierarchy Understand how the order of elements on a page affects how a user views and interacts with it. o Layouts and Grids Learn how to create visual alignment and harmony by utilizing grids. o Responsive Web Design Examine best practices for creating designs that scale across different devices, viewports, and display resolutions. o WEEK 3 o Color Learn how color can affect the look and feel of a product and its interface. o Typography Look at different type classifications, styles, and learn how to choose the right typefaces. o Iconography Learn how to use icons to create hierarchy, highlight information, and help express meaning in a product. • WEEK 4 o Prototyping Create your very own high fidelity prototype and learn more about rapid iteration. o Handoffs Finish the course by learning how to hand off designs to other members of a product team.

	○ Design Processes ○ User Psychology ○ Conducting User Research ○ Creating User Personas ○ What Is Lean UX? ○ Gathering Requirements ○ User Flows & User Flow Diagrams ○ Exploratory Sketching & Rapid Prototyping ○ User Testing ○ Portfolio Preparation Exercise • User Interface Design Process Create a workflow for your app and design a mood board, mockups, and the primary screens for your app. Here's what you'll learn: ○ Finding Inspiration ○ Building a Mood Board ○ Primary & Secondary Actions ○ A/B & Preference Testing ○ Responsive Design Patterns ○ Responsive Grids & Frameworks ○ Creating a Style Guide ○ Reviewing & Critiquing ○ The Feedback Loop ○ Mockups • Mobile App Design for iOS and Android Wireframe and design a complete mobile meeting management app and/or an app of your choice for both iOS and Android. Here's what you'll learn: ○ Mobile Platforms: iOS ○ Mobile Platforms: Android ○ Mobile Design Patterns & Trends ○ Learning from Others ○ Basic App Structure ○ Sounds & Physical Feedback ○ Mobile Gesture ○ Building a Mobile App ○ Prototyping a Mobile App ○ Portfolio Preparation • Animation, Branding, & UI Design Design an app from start to finish, using everything you've learned in the program. You'll also gather your coursework and build your professional portfolio. ○ Reusing Common Components ○ Prototyping Animation ○ Building a Cohesive Brand ○ Less is More ○ Starting From Nothing ○ Final Project Part 2 ○ What Makes a Good Portfolio? ○ Building Your Portfolio

Course Name	**Portfolio MASTERCLASS - UX/UI case studies**
Details	https://www.udemy.com/course/portfolio-masterclass-uxui-case-studies/ • **About the course:** Learn how to create stunning UX case studies • **Offers by:** Udemy • **Instructor:** Zoe K. • **Time:**2.5 hours • **Price:** $25
Syllabus	• Introduction What do you need? Class outline Introduction • UX case study What is a UX case study? Choosing work to showcase Example The power of storytelling Turn your UX case study into a story Plan your outline Watch me work: Outline • Create an outline Introduction Background Information Process Research Concept Design Testing Outcome • Visuals Layout Watch me work: Layout Images Icons Typography Mockups Animations Videos • Publish Where to host the case study? Behance Social Media How to find clients

Course Name	Web and Mobile Design Series User Interface Designer
Details	https://www.ciwcertified.com/ciw-certifications/web-and-mobile-design-series/user-interface-designer/course-description • **About the course:** This course introduces strategies and tactics necessary to design user interfaces, with particular emphasis on creating user interfaces for mobile devices. It focuses on teaching specific development techniques and strategies. • **Offers by:** The University of California has approved the CIW User Interface Designer certification on the 2016-2017 • **Instructor:** CIW
Syllabus	• **Introduction to User Interface Design** What Is User Interface Design? Evolution of Web User Interfaces Current Trends in Web Design Web Design Team Roles and Responsibilities Web Design Project Management Collaborative Web Design Creating a Web Design Portfolio Creating a Plan for a Web-Based Business Project • **User Interface Design Process** Choosing a Web Design Methodology Creating a Web Site Vision Statement Creating and Implementing a Web Site Strategy Creating a Web Site Specification Publishing a Web Site Choosing a Web Site Host Securing a Web Site Creating Ethical and Legal Web Sites Creating a Mind Map Using Metaphors Creating Word Lists and Mood Boards Creating a Site Map • **User-Centered Web Design** User-Centered Web Design The Cognitive Psychology of Web Design Personas and Usability Accessibility • **User Interface Design Principles and Legal Guidelines** Web UI Design Principles Visual Design Principles Branding Legal Issues Impacting Web Design

Course Name	**UX/UI Design and Development, M.A.**
Details	https://www.nyit.edu/degrees/ux_ui_design_and_development_ma • **About the course:** Upgrade Your Career and Create Beautiful UI Design Systems in 8 weeks. Hands-on experiential and project-based learning in which students actively explore real-world problems and challenges and acquire a deeper understanding of the subject. • **Offers by:** State university of New York • **Instructor:** State university of New York • **Time:** 8 weeks • **Price:** $2,440 - $2,710
Syllabus	✓ The Role of a UI Designer ✓ UI Design Workflow ✓ User-centric Design Process ✓ UI Design Tools ✓ Finding and Using Design Inspirations ✓ UI Design Fundamentals ✓ UI Design Components ✓ Unique Attributes and Design Considerations for Each Type of Website ✓ Unique Attributes and Design Considerations for Mobile Apps ✓ Accessibility Guidelines ✓ Designing for Usability/Learnability ✓ Micro-Interactions ✓ High-Fidelity Click-Through Prototyping ✓ Create and Maintain a UI System Style Guide ✓ UI Design Presentation Skills ✓ UI Design Portfolio Preparation

	• **Color, Typography, Layout and Wireframing** Color Typography Layout Wireframes and Mockups Responsive Web Design • **Designing a Basic Web Site** Creating a Web Site Part 1: Creating One Site Page Part 2: Creating the Remaining Site Pages Spell- and Grammar-Check the Site • **Navigation Concepts** Why is Web Site Navigation So Important? Site Structure, Directory Structure and URLs Positional Awareness Primary and Secondary Navigation Navigation Elements Navigation Conventions and Principles Creating a Navigation System • **Designing and Developing a Professional Web Site** Why is Prototyping So Important? User-Centered Web Design User Interface Design Patterns Optimizing the look and feel of a Web site Focus on Web Forms GET and POST Constructing a Professional Web Site Web Framework User Interface Libraries Web Content Management Systems Additional Web Development Tools Web Hosting Services and Domain Names • **Site Publishing, Maintenance, Security, and SEO Strategies** Making Sure a Web Site is Ready to be Published Maintaining a Web Site Search Engine Optimization (SEO) SEO and Written Site Content SEO and Mobile-Friendliness SEO and Metadata

Appendix (D)

- ✓ **Summary of the chosen syllabus**

  After reviewing the previous UI mobile app design syllabus, we notice these essential points:

1. The available courses are not fully specialized for UI Mobile app design; it is usually included as a second section in UX courses or in general, UI design courses.
2. Some UI mobile app design courses present the practical part such as working with programs without a good understanding of theoretical knowledge.
3. The most available courses about code and programs target programmers more than designers.
4. There is a lack of Arabic content about UI mobile app design

- ✓ **Grouping similar feature together.**

  After extracting all features from the previous syllabus and grouping similar features together.so, we can decide which is the suitable part from each syllabus we can use, edit, or develop to carry out the new specialized syllabus for this research.

  The goal of this phase is to design a syllabus that falls in line with all previous syllabus.

  - **User interface**
  - ✓ What is user interface?
  - ✓ Roles in UI/UX
  - ✓ Platforms & devices
  - ✓ Native app vs. mobile web app: which mobile strategy is right for my business
  - ✓ UI vs. UX design
  - ✓ UI principles
  - ✓ UX principles
  - ✓ UI elements
  - ✓ UI patterns
  - ✓ Platforms and screen sizes
  - ✓ Google design material and iOS guidelines
  - ✓ Understanding Brand Platforms
  - ✓ UI Differences between Android and iOS
  - ✓ Using brand platforms to define a product’s visual style
  - ✓ Developing design systems

- ✓ Symbols & iconography
- ✓ Evoking emotion in UI
- ✓ Text & typography in UI
- ✓ Using color in UI
- ✓ Mobile design patterns & trends
- ✓ Finding and using design inspirations
- ✓ Current trends in mobile app design
- ✓ Usability Principles

- o **Design**
- ✓ Visual design principles & visual heuristics
- ✓ Intro to Grids
- ✓ Layout design & spacing
- ✓ Mockups
- ✓ Visual Hierarchy
- ✓ Layouts and Grids

- o **Tools**
- ✓ UI Design Tools: Adobe XD

- o **Library**
- ✓ User interface components
- ✓ User Interface Libraries

- o **For Developers**
- ✓ Collaborating and Communicating with Developers
- ✓ Putting it All Together: Slice 'n' Dice
- ✓ Producing Assets for Mobile developers
- ✓ Preparing Your Work for Handoff
- ✓ Slicing images and buttons
- ✓ Export formats

- o **Case study**
- ✓ Creating a case study

- ✓ Studying case study: taxes and tickets

- **Final project**
- ✓ Projects in mobile design course

- **Quality assurance:**
- ✓ Making sure mobile app is ready to be published
- ✓ Android launch checklist

- **For portfolio**
- ✓ The Components of an Effective Presentation
- ✓ Building Your UI Design Portfolio

- ✓ **Finalize the required feature for our syllabus**
  - The syllabus should be a mix of theoretical and practical together
  - The syllabus should contain lessons to teach design programs such as Adobe XD
  - The syllabus should export a final project to be productive syllabus
  - The syllabus should give the students the skill to present their work in a professional way
  - The syllabus should teach UI rules and graphical user interface from a design perspective
  - The syllabus should give the students the ability to think critically when they see UI screens. In addition to evaluating their work by themselves
  - The syllabus should be in line with the market industry and to make collaboration with developers

Appendix (E)

The first draft syllabus

1. **Introduction**
    - Introduction
    - What is user interface design?
    - The relationship between UI and UX
    - Aesthetics Vs. Functionality
2. **UI Process**
- **Theoretical**
    - User experience principles
    - User interface principles
    - Mobile app design principles
    - Gestalt principles in UI design
    - Best practice: Do/Don't
    - Types of mobile app
    - Application categories
- **Practical**
    - Understanding brand platform
    - Using brand visual identity to define a UI visual style
        - If visual identity available: use the brand guidelines
        - If visual identity not available: try to make solutions
    - Understanding types of app screens
    - Understanding UI elements
    - Using animation and sound in UI design
    - Mood board for UI mobile app design
    - UI trends & technology trends that will transform the mobile app industry
    - Get inspirations
- **Tools**
    - Prototyping Tools: Adobe Experience Design
      Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android
    - Collaboration between Adobe programs
    - Elaborating the wireframes into page mockups
    - Using Photoshop mockup to present mobile screens
    - Testing Tool
- **Publish**
    - For portfolio
    - Export graphics for google play and apple store
3. **UI case studies & UI best practice**
    - General best practice UI
    - Chose an app to study
    - Using (UI case study checklist tool) as an evaluation system to evaluate UI mobile app design
4. **Final project**
    - Give the students the requirement for designing the app
    - Students should use ready to use free material for portfolio section to present their work
    - Make a live dissection to present all students projects and review them After the students finished

Appendix (F)

Expert interview

After finishing the first draft of the syllabus, we send it to five experts specializing in different major such as UI design ,UX Design, and curriculum experts to make an expert interview. Which we designed to evaluate, review and develop the first draft syllabus suggested by the researcher. The interview was done online through Email and Zoom in Arabic language then it was translated it to English.

Demographic Data

- Name……
- Gender: Male/Female
- Job Title and workplace…….
- Years of experience
    - 1-5 years
    - 2-10 years
    - 11-15 years
    - More than 16 years
- Level of current education:
    - Bachelors
    - Masters
    - PhD
- **Type of current work**
    - Lecturer
    - Designer
    - Both

Give them the first draft syllabus

Questions: This interview is designed to ask about:

1. How do you evaluate the first draft syllabus in terms of clarity and understanding of the titles? if not? what's your suggestion to modify it? (open/ended questions)
2. How do you evaluate the first draft syllabus in terms of arrangement sequentially? if not? what's your suggestion to rearrange it? (open/ended questions)
3. What areas need improvement? If you have a chance to add, remove, or edit any part from the syllabus, feel free to mention it and write the reason behind that? (open ended questions)
4. How do you evaluate the first draft syllabus in terms of to be applied at Jordanian university? (open/ended questions)
5. How do you evaluate the first draft syllabus in terms of to be in the line with the market? if not? what's your suggestion to modify it? (open/ended questions)
6. How do you evaluate using adobe XD to teach the student designing UI mobile app? is a good choice? Why? if not? what's your suggestion? (open/ended questions)
7. How do you evaluate the first draft syllabus? (open/ended questions)
8. Do you have any recommendations? (open ended questions)

Appendix (G)

The final syllabus

1. **Introduction**
    - User interface design
    - User experience design
    - The relationship between UI and UX
    - The Process of Mobile App Designing
2. **UI Process**

- **Theoretical**
    - User experience principles
    - User interface principles
    - Mobile app design principles
    - Gestalt principles in UI Design
    - Best practice: Do/Don't
    - Types of mobile app
    - Application categories
- **Practical**
    - Understanding brand platform
    - Determine the UI visual style
        - If visual identity available: use the brand guidelines
        - If visual identity not available: try to make solutions
    - Understanding types of app screens
    - Understanding UI elements
    - Using animation in UI design
    - Using mood board for UI mobile app design
    - UI trends & technology trends that will transform the mobile app industry
    - Get inspirations
- **Tools**
    - Prototyping Tools: Adobe Experience Design
      Introduction – Design – Prototype - Share and export - Design systems - Cloud documents - Integrations and plugins - XD for iOS and Android
    - Collaboration between Adobe programs
    - Elaborating the wireframes into page mockups
    - Using Photoshop mockup to present mobile screens

- **Publish**
    - For programmer
    - For portfolio
    - Export graphics for google play and apple store

3. **UI case studies & UI best practice**
    - General best practice for medical UI mobile app design
    - Choosing a medical app to study
    - Using (UI checklist tool) to evaluate UI mobile app design
4. **Final project**
    - Designing specified 6 UI mobile app screen
    - Preparing and presenting the project for Behance
    - Evaluating and reviewing the final projects by expert

Course syllabus and schedule

- **Syllabus philosophy**

  The syllabus is designed especially for visual communication design students, taking into consideration the theoretical and practical knowledge side by side. In addition, it is designed to be in line with the market industry. Therefore, each student will have a final project presented on Behance and will be ready to work directly after finishing the course. Our main purpose is to facilitate the design process through ready-to-use free materials, which are designed and collected especially for students. Furthermore, we do not miss the relationship between designer and programmer. Therefore, we add a special part called (publish for the programmer) in the publish section.

- **Course objectives**
  - ✓ Understanding UI mobile app theoretical and practical
  - ✓ Facilitate the design process through ready-to-use free materials
  - ✓ Improve the communication between designers and developers through publish part
  - ✓ Easily work with Adobe XD to design the app screen
  - ✓ Using critical thinking not only after you design the screens but also before you design through practicing that in case study part and check list tool
  - ✓ Prepare learners to be ready to work because the course is design to be in line with industry requirements

- **Course outcome**

  Students will have a proper understanding of UI mobile app design, which will allow them to build mobile app design in the right way throughout the syllabus. Therefore, they will apply what they learn in the final project not only designing the app screens but also to presenting the screens in a professional way to use it on Behance as online portfolio.

- **Course schedule**

  The course will be both online for lessons and live for dissections.

  Time: Total of 45 Hours /8 weeks,15 hours for theoretical lessons,10 hours for practical part and 20 hours for final projects.

Exclusive development

The below developments are created and designed especially for this course. As a result, this makes the syllabus unique of its kind.

- ✓ **Ready to use free material:**

  We provide the students with all the material they will use during and after finishing the syllabus to facilitate the designing process and to make sure that all sizes are completely right. The free ready to use materials were designed and collected by the researcher.

  - Free design system kit (XD-PSD-AI).
  - Free icons kit.
  - Free English & Arabic font kit.
  - Free color palette kit.
  - Free wireframe kit.
  - Free mobile mockup (PSD).
  - Free presentation mockup designed to present your work on Behance. (AI)
  - Free template for apple store and google play promotion: (AI)
    App icon – Feature images – App images.
  - Free Video template to present your app in stores for (Apple & Android). (AE)
  - Free UI case study checklist tool.
  - Free Google design and apple store material.
  - Free mood board template

- ✓ **Export section:**

  For programmer, for portfolio, for google play and apple store

- ✓ **UI case study:**

  None of the previous syllabus talk about UI case studies, While UX courses talk about UX case studies. As a result, we add this section. After reviewing the general best practice for the medical apps, all students should choose one medical app to study as a case study. Therefore, it will be an interactive discussion lesson

- ✓ **UI case study checklist tool:**

  Creating an evaluation system for a UI mobile app design (checklist) will support the performance of students when they are making a case study for a medical app during the course because they will know the specific standards to evaluate the app accurately. In addition, it will help them later to evaluate their work by themselves by using the checklist tool, which was developed and designed by the researcher.

- ✓ **Mood board for UI mobile app design:**

  A mood board is a visual representation of a concept design. The idea of mood board is to organize your inspirations at the stage of creating the concept. Therefore, that will organize ideas and will give the designer inspirations to solve any problem. In addition, it

gives quick look about what the app will be like. Generally, mood board are more common in fashion design and interior design more than UI mobile app deign. However, in our course we will use it.

- ✓ **Free book related to UI mobile app design**

Appendix (H)

Standards to evaluate syllabus and reference for the selected criteria

What criteria should be used to develop a curriculum evaluation model?

The criteria were chosen from previous studies as a reference for the questioner of this study.in addition, Questions were unified and distributed to suit with experts and students evaluation. In addition, the pilot study is in line with those criteria.

1. **Theoretical – Practical – Productive Criteria**

The following study (Enhancing Learning by Integrating Theory and Practice) emphasizes the importance of the theoretical criteria as well as the Practical criteria in the successfulness of the practical result. This can be achieved through classes, academic materials, and practice in an educational style called learning by doing.

In addition, it mentioned that responsibility is mutual between teacher and student, and it is important to have balance between knowledge and practice. Also teacher and student to grantee the success of any educational material. https://files.eric.ed.gov/fulltext/EJ899313.pdf

The following study (exploring outcomes of a postgraduate mathematics curriculum) emphasized the importance of the three criteria: theoretical, practical and productive in constructing the educational syllabus. This concept was applied on a math students sample and proved its effectiveness.

(1) (PDF) EXPLORING OUTCOMES OF A POST GRADUATE MATHEMATICS CURRICULUM. Available from: https://www.researchgate.net/publication/332621702_EXPLORING_OUTCOMES_OF_A_POST_GRADUATE_MATHEMATICS_CURRICULUM [accessed Nov 25 2021].

In addition to that, Kelly in his book (The Curriculum: Theory and Practice) summarize all main criteria required to create the modern syllabus and applying it through practical criteria. https://www.amazon.com/Curriculum-V-Kelly/dp/1847872751

The following article by infed.org emphasize on the importance of constructing the syllabus based on theoretical practical and productive criteria all together to get an interactive modern syllabus. https://infed.org/mobi/curriculum-theory-and-practice/

Furthermore, this study (provincial plan of training for the industrial instrument mechanic occupation) divided the syllabus into two parts: academic and theoretical-practical of which the syllabus was created. https://www.gov.nl.ca/atcd/files/app-publications-induistrumentmech.pdf

In addition, from the questioner of (Government of Newfoundland and Labrador Department of Advanced Education), the following questions were introduced:

- Please, comment on the adequacy of balance between theory (i.e., classroom) and practice (i.e., lab/shop/fieldwork) within the program.
  https://www.gov.nl.ca/ipgs/files/forms-privatetraining-pdf-pti3-curriculum-eval.pdf

And from the questioner of (Course Evaluation Sample Questions and Survey Template)

The following question were introduced:

https://www.questionpro.com/survey-templates/student-course-evaluation-teacher-evaluation/

- How much practical knowledge have you gained from this course?

The Question that was improved by dividing the main question into sub questions to meet the purpose of this study.

- What is your evaluation of the training program from theoretical aspect?
- What is your evaluation of the training program from practical aspect?
- What is your evaluation of the training program from designing aspect?
- What is your evaluation of the training program from productive aspect?

Finally, the three criteria were used as main criteria used to create and measure the effectiveness of the training program.

2. Designing criteria

The following study (Creating an evaluation system for a mobile application design to enhance usability and aesthetics) revealed that a balance between usability and aesthetics was important. In addition, create evaluation system for mobile applications to enhance usability and aesthetics for stress reduction considering design principles and factors for usability

Include typography, visual hierarchy, grid-based layout, alignment, colors, legibility, buttons, intuitiveness, simplicity, navigation, contents, attractiveness and consistency. Designers can use this evaluation matrix, not only as an assessment for an existing mobile application design, but also as a design tool

From this study the designing criteria was chosen as one of the criteria to create and measure the effectiveness of the training program. https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=3751&context=etd

From the questioner of the following study the following questions were used under the section of aesthetic vision. (The design and implementation of the evaluation matrix attractiveness)

- The visual look of the application meets the stylistic expectation of the target audience very well.
- There is enough variation in the visual factors to establish a sense of visual interest in the application.

The question that was improved for our study is:

- How do you evaluate the output of the training program from designing aspect?
- How do you evaluate adhering the training program to fundamentals of designing and its reflection on the final project?

3. Evaluating the effectiveness of ready to use materials

University of Wisconsin–Madison confirmed the importance of ready to use materials in the syllabus and the best material is the flexible one to suit with the nature, objectives, activities and application of the syllabus. In addition, the study inserted a complete table of useful references, recommendations, samples of ready to use materials. https://designteachengage.wisc.edu/instructional-materials/

Dr Stacey M Johnsonin an article for Vanderbilt University emphasized on the importance of the availability of ready to use materials in every training course like a video, working paper, audio or any suitable material depending on the nature of the course. Creating Your Own Course Materials https://www.vanderbilt.edu/cdr/module1/creating-your-own-course-materials/

From the above mentioned we concluded the importance of inserting ready to use materials in the training program. Also evaluating the effectiveness of the tailored ready to use materials will be criteria for designing the training program.

From a questioner for (Government of Newfoundland and Labrador Department of Advanced Education, Skills and Labor) the following questions were listed: https://www.gov.nl.ca/ipgs/files/forms-privatetraining-pdf-pti3-curriculum-eval.pdf

- Please explain whether the tools, equipment and/or supplies listed for practical components of the curriculum (if applicable) are satisfactory for program delivery (i.e., do they support the learning outcomes of the program?).

- Please explain whether there are adequate learning resources (e.g., print media, audio-visual materials) provided for program delivery and to actively engage students.

The question that was improved for our study is:

- Did the training material contain free templets to use or any other sources to facilitate the designing process?

From a Curriculum Evaluation questioner the following questions were listed: https://www.sagepub.com/sites/default/files/upm-binaries/44333_12.pdf

- Materials :6- Are the instructional materials designed and organized in a manner that facilitates teacher use? Page 870

The question that was improved for our study is:

- Do you think that the added ready to use templets has a positive effect on the quality of end designs?

4. Evaluating the fitness of the training program for work market

In (Salford Business School in UK), syllabus are designed to suit the work market and graduate students with excellent academic and practical knowledge.https://www.salford.ac.uk/salford-business-school/co-created-curriculum

In reference to LinkedIn Report, user interface design is one of the top ten growing job demand due the increased growth of digital products.https://careerfoundry.com/en/blog/ui-design/how-to-become-a-ui-designer/

From this it was concluded the importance of educational practical program to meet the working market demand and to make this criteria the base of measuring the program effectiveness

The following question was presented in (Government of Newfoundland and Labrador Department of Advanced Education, Skills and Labour) under needs assessment and market analysis questionnaire: https://www.gov.nl.ca/ipgs/files/forms-privatetraining-pdf-pti2-needs-market-analysis.pdf

- Please elaborate on the current local/provincial need for this type of training. Please elaborate on the current national/international need for this type of training.

The following question was presented in a questioner prepared by Ministry of Education in Croatia: https://mzo.gov.hr/UserDocsImages/dokumenti/Obrazovanje/NacionalniKurikulum/PredmetniKurikulumi/Recenzija%20-%20Informatika%20-%20Ujedinjeno%20Kraljevstvo%20(review-informatics-uk).pdf

- Are the proposed learning outcomes and other elements of the curriculum in line with the European and global recommendations (e.g. DigComp, UNESCO ICT competency framework, Better Internet for KIds etc.)?

The question that was improved for our study is:

- Do you think that the training material was sufficient and up to the level to enter the working market in this specialty?

5. Evaluating the demand on the training g program

The main objective of this study is to measure the effectiveness of the training program as well as the demand on it. From the pilot study, we can find the demand on such a training program, and after its implementation on the students we can find out if they recommend the program for their workmate or they need an advanced second part.

The following question was introduced from …. organization questioner:

- Please indicate whether the need for this type of training will increase in the future, both locally and nationally.

Needs assessment and market analysis questionnaire (pti – 2)

https://www.gov.nl.ca/ipgs/files/forms-privatetraining-pdf-pti2-needs-market-analysis.pdf

The following question was introduced from (Course Evaluation & Improvement Survey Questions template): https://www.questionpro.com/survey-templates/course-evaluation-and-improvement/

- Considering your complete experience with us, how likely would you be to recommend the course to your friends and family?
- Would you recommend this course to other students? If no, why not?

The question that was improved for our study is:

- Did you previously wish to have specialized UI mobile app design training program?
- Are you going to recommend this training program for your workmate?
- Are you going to join another advanced training program on the same subject?

6. **Evaluating the suitability of the training program to university education system (for experts)**

This question was created for this study because the main problem was the weakness of the academic syllabus related to this subject. For this reason, the training material was designed to be introduced for university students. But the researcher faced difficulties to apply it in universities, so the training program was implemented on students online. After implementation and collecting the results, experts will be asked only about the suitability of educational material to the academic system.

7. **Evaluating if the allocated time is suitable for the training program**

According to syllabus evaluation model from university of Florida ,The researcher conclude the importance of evaluating time suitability for the training program and consider time as a basic criteria in creating the training program and evaluating its effectiveness.https://dental.ufl.edu/files/2015/08/20130325-All-Attachments.pdf

The following questions were introduced from (Government of Newfoundland and Labrador Department of Advanced Education, Skills and Labor) questioner: https://www.gov.nl.ca/ipgs/files/forms-privatetraining-pdf-pti3-curriculum-eval.pdf

- Please comment on whether the time allocated to EACH course is sufficient, excessive, or inadequate

The following question was introduced from (Ministry of Science and Education in Croatia) questioner:

https://mzo.gov.hr/UserDocsImages/dokumenti/Obrazovanje/NacionalniKurikulum/PredmetniKurikulumi/Recenzija%20-%20Informatika%20-%20Ujedinjeno%20Kraljevstvo%20(review-informatics-uk).pdf

- Are the learning outcomes and educational content appropriate for the number of classes?

The question that was improved for our study is:

- Do you think that the time was suitable for the given educational material?
- Are the out results and final project quality proportional to the course and its time given

8. **Evaluating the preference of introducing the program face-to-face or online.**

In a study from (Johnson & Wales University) one question in a published research asked about the student's preference of face-to-face compared with on line education. An exploratory study was done to find out the ratio of preference between the two options.

Out of this study, the researcher concluded the importance of finding out the preference of students and to include that question in the exploratory study. In addition, this criteria was considered as a basic factor in creating the training program and evaluating its effectiveness. https://scholarsarchive.jwu.edu/cgi/viewcontent.cgi?article=1000&context=mba_student

- What are the attitudes and perceptions of students towards face-to-face and online courses?

The question that was improved for our study is:

- Do you prefer the training program to be face-to-face or online?

9. Evaluating the trainer

From this study (Student evaluation for curriculum and teacher development), the importance of evaluating the trainer by the students was concluded and this criteria was considered as a basic factor in creating the training program and evaluating its effectiveness. https://www.tandfonline.com/doi/pdf/10.1080/10408347308000591Terry D. Buss (1976) Student evaluation for curriculum and teacher development, The Vocational Aspect of Education, 28:69, 19-23, DOI: 10.1080/10408347308000591

The paper (Questionnaire design and data analysis: an alternative approach in student evaluation of teaching) Emphasized on the importance of student's evaluation of the trainer to measure the effectiveness of educational process since the student is the base and core of the educational process.

The questioner was done and improved to evaluate the trainer by the students allowing them not only to fill the questioner but also to be partners in designing the syllabus.

This study emphasize on the importance of student's evaluation of the trainer to measure the effectiveness of the training program, and suggests designing a special questioner for this purpose. https://core.ac.uk/download/pdf/148366625.pdf

The following question was introduced from (Course Evaluation Sample Questions And Survey Template) questioner:https://www.questionpro.com/survey-templates/student-course-evaluation-teacher-evaluation/

- What overall rating would you give the course instructor?
- What would you recommend to improve the instructor's performance?

The following question was introduced from (Course Evaluation & Improvement Survey Questions) questioner:https://www.questionpro.com/survey-templates/course-evaluation-and-improvement/

- Would you take another course taught by this professor?

The question that was improved for our study is:

- What is your evaluation of the trainer?
- Would you like in the future to take any other training with the same trainer?
- Do you have any notes to improve the trainer performance?

10. Other recommendations

According to syllabus evaluation model of Florida University, we note the last section asking for any other recommendations or suggestions https://dental.ufl.edu/files/2015/08/20130325-All-Attachments.pdf

In line with that model (do you have other recommendations) was placed at the end of our questioner and it was considered as one criteria to create and evaluate the effectiveness of the training program.

In addition, in the official website of the Government of Newfoundland and Labrador made curriculum evaluation questionnaire asked about:

https://www.gov.nl.ca/education/files/forms-privatetraining-pdf-pti3-curriculum-eval.pdf

- Please provide any additional comments regarding this program you feel have not been previously addressed.

The question used in our study was:

- Do you have any proposal or recommendations?

Appendix (I)

Expert's Evaluation

- The educational training program of UI Mobil app design is 45 hours divided into 15 theoretical hours, 10 practical hours and 20 hours for the final project.
- The training program was free online and 26 students joined the program from 3 private universities in Jordan: Al-Zaytoonah University, Middle East University and Philadelphia University.
- The questioner aim is to evaluate the training program through evaluating the final projects
- Also the training program was evaluated by the students.
- All the final projects are the first time project for students without any experience in this field

Demographic Data

Note: this information is strictly confidential

- Name
- Gender: Male/Female
- Age: under 20 / 21-30 / 31-40 / 41-50 / 51-60
- Level of current education:
    - Bachelors
    - Masters
    - PhD
- Job Title and place
- Years of experience: 1-5 / 6-10 / 11-15 / 16+

After finalizing the projects with the students and after the student's evaluation, the links of final projects and Behance were given to the experts to answer the questioner. Deep discussions and evaluation of the final project were done individually with each one of the experts.

The expert questioner was divided into two parts: the first one for evaluating each project alone and the second part for evaluating the syllabus through overall projects evaluation.

Part one: questions for evaluating each project alone

1. How do you evaluate the project in general?
2. How do you evaluate the project: applying the brand identity into UI screens?
3. How do you evaluate the project: Designing Behance presentation for the app?
4. Do you have any recommendations?

Part two: general questions

After evaluating the whole final projects as a result of the training program – each project alone- kindly answer the following questions related to the training program

1. How do you **evaluate all** the **final projects** in general?
2. How do you evaluate the student level after the training program will be high enough to qualify their entrance in**to the market industry**?
3. After evaluating the **final project**, how do you evaluate the **acceptance of the training program?**
4. How do you evaluate the benefits if we recommend to **apply this training program in the universities**?
5. How do you evaluate the training program and the allotted **time**? 45 hours 15 theoretical 10 practical 20 final projects
6. Do you have any **recommendations**?

Appendix (J)

Student's Evaluation

Demographic Data

Note: this information is strictly confidential

- Gender: Male/Female
- Age: under 20 / 21-30 / 31-40 / 41-50 / 51-60
- Bachelor's University name:
  - Al-Zaytoonah University
  - Middle East University
  - Philadelphia University
- Level of current education:
  - Bachelors
  - Masters
  - PhD
- Do you work: Yes/ No
- Years of experience: 1-5 / 6-10 / 11-15 / 16+

Questions

1. How do you evaluate the benefits you have gained from this training program?
2. How do you evaluate the theoretical knowledge have you gained from this training program?
3. How do you evaluate the practical knowledge have you gained from this training program?
4. How do you evaluate the trainer?
5. Will you advise your workmates in this training program?
6. Will you participate in a second advanced training program?
7. How do you evaluate the training program and the allotted time? 45 hours 15 theoretical 10 practical 20 final projects
8. How do you evaluate the training program, will be high enough to qualify your entrance into the market industry?
9. How do you evaluate the benefits of attached ready to use free material in this training program?
10. After you finished this online training program. How do you evaluate the benefits of taking online courses?
11. Do you prefer Any future training program to be face-to-face or online or interactive online or there is no difference?

Appendix (K)

الرئيسية الدورات المدونة

الدورات / غير مصنف

برنامج تدريبي لتعليم تصميم واجهات تطبيقات الهواتف الذكية

التصنيف	المستوى	مدة الدورة
غير مصنف	كل المستويات	45:00:00

عن الدورة المواد المحاضرين التقييمات

عن الدورة

ما الذي يميز هذا البرنامج عن غيره؟؟

لا نريد القول أنه البرنامج الأول و الوحيد.. و لا نريد أن نوصلك للعالمية والاحترافية.. هدفنا بسيط جدا هو: أن نوصل المتدرب ليفكر بأسس أكاديمية منطقية لتصميم الواجهات قبل التطبيق على البرامج التصميمة ومن ثم تدريب المتدرب على استخدام البرامج بطريقة صحيحة لينتهي به الأمر لعمل مشروع نهائي ليستخدم بمحفظة الأعمال وبالتالي يصبح المتدرب قادرا على التفكير النقدي وعمل دراسة حالة لأي تطبيق

الوصف

برنامج تدريبي مكثف نظري وعملي لتعليم تصميم واجهات تطبيقات الهواتف الذكية باللغة العربية يتضمن ملفات مجانية مفتوحة للمساعدة في العملية التصميمية و متوافق مع سوق العمل و يتضمن شرح لبرنامج Adobe XD بالإضافة إلى وجود مشروع نهائي في نهاية البرنامج و وجود جزء نقدي متخصص بدراسة الحالة

متطلبات الدورة

- تصميم جرافيكي

ماذا سوف تتعلم؟

تصميم واجهات تطبيقات الهواتف الذكية

عن الدورة | المواد | المحاضرين | التقييمات

- استبيان بداية الكورس
  - استبيان بداية الكورس للمشتركين
- فهرس المحتويات
  - الفهرس
- عن المدرب
  - ~~عن المدرب~~
- المقدمة
  - كويز رقم 1
  - مقدمة
  - ~~لينكات~~

- دراسة الحالة
  - الممارسات الفضلى لتصميم واجهة تطبيق طبي
  - اختيار تطبيق و عمل دراسة حالة عبر أداة التقيم
  - استخدام أداة التقييم بشكل عملي
  - لينكات
  - تحميل ملفات أداة التقييم لدراسة الحالة
- المشروع النهائي
  - اختيار المشروع النهائي
- الملفات و الكتب التصميمة المجانية المساعدة
  - الملفات التصميمية المجانية
  - كتب في مجال تصميم واجهة المستخدم
  - كتب -1
  - كتب -2
  - كتب في مجال التصميم
- استبيان نهاية الكورس
  - استبيان نهاية الكورس للمشتركين

Appendix (L)

Final Project

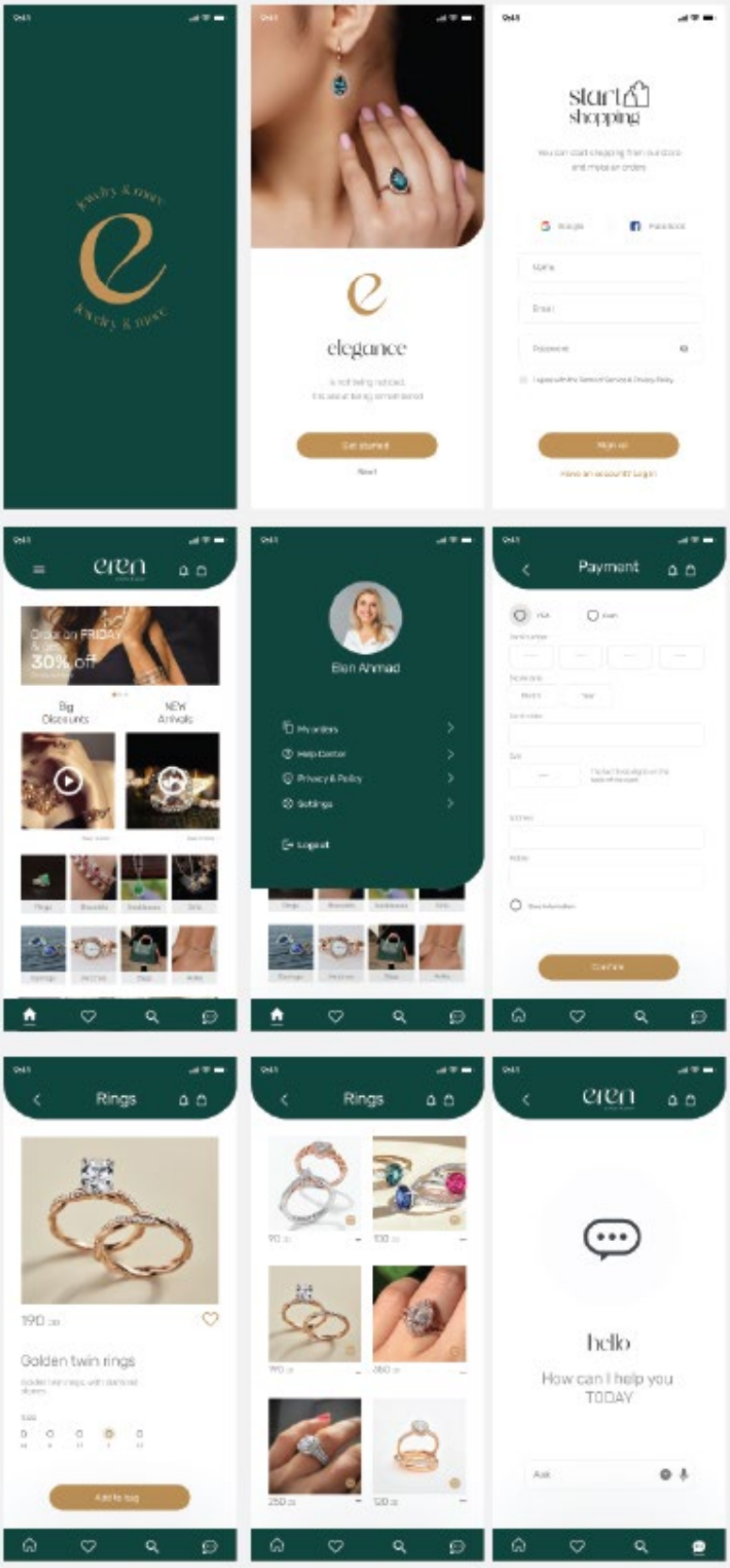
The final project was optional for students and after 26 students completed the training program 9 of them were interested to do the final project. Only 4 of them finalized their projects that is ready to present on Behance.

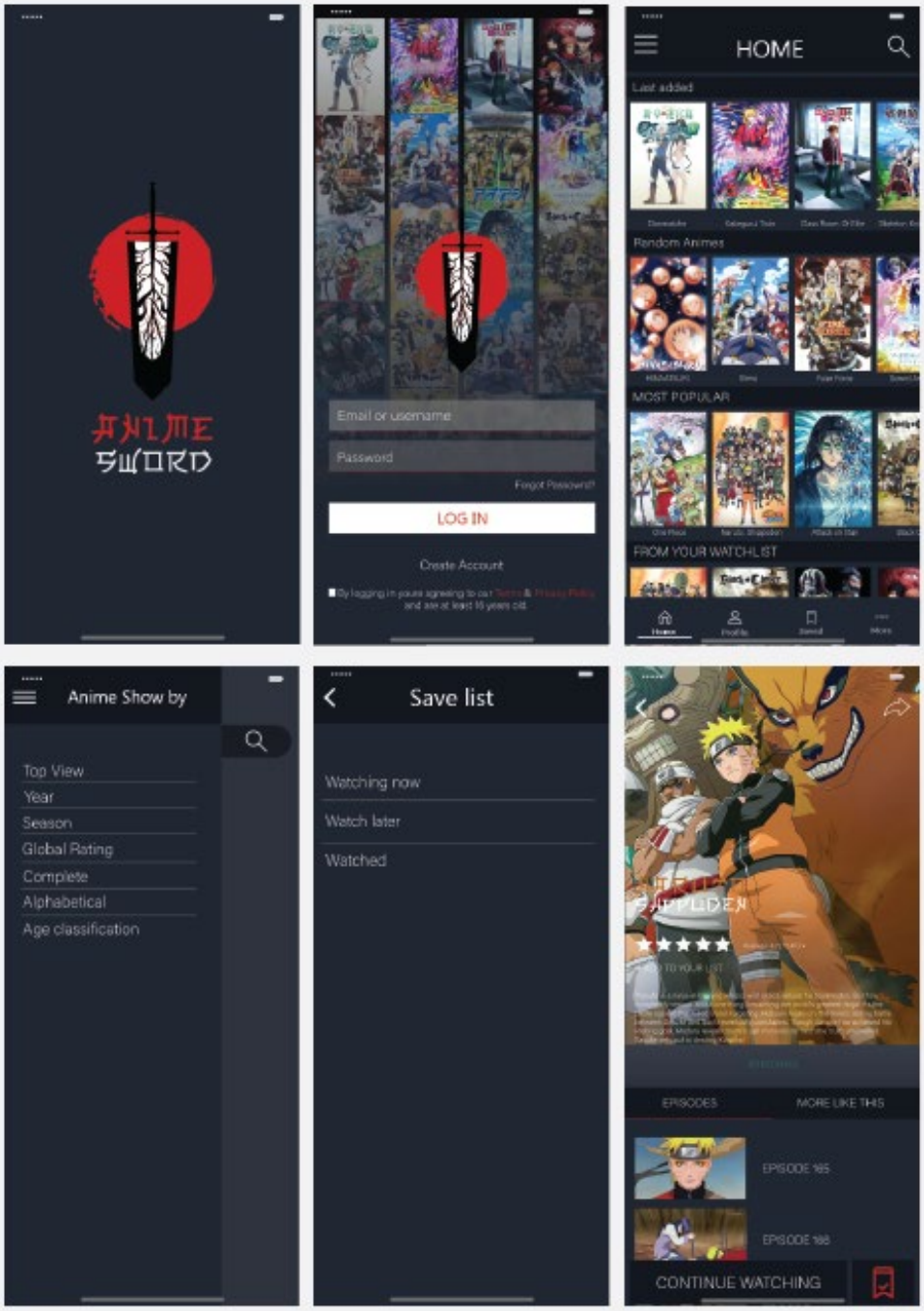
For choosing the final project questioner was sent for the students to find if they have an idea to work on or they would like to redesign an available app at mobile store. Two students have their own ideas while the other two prefer to redesign a mobile app.

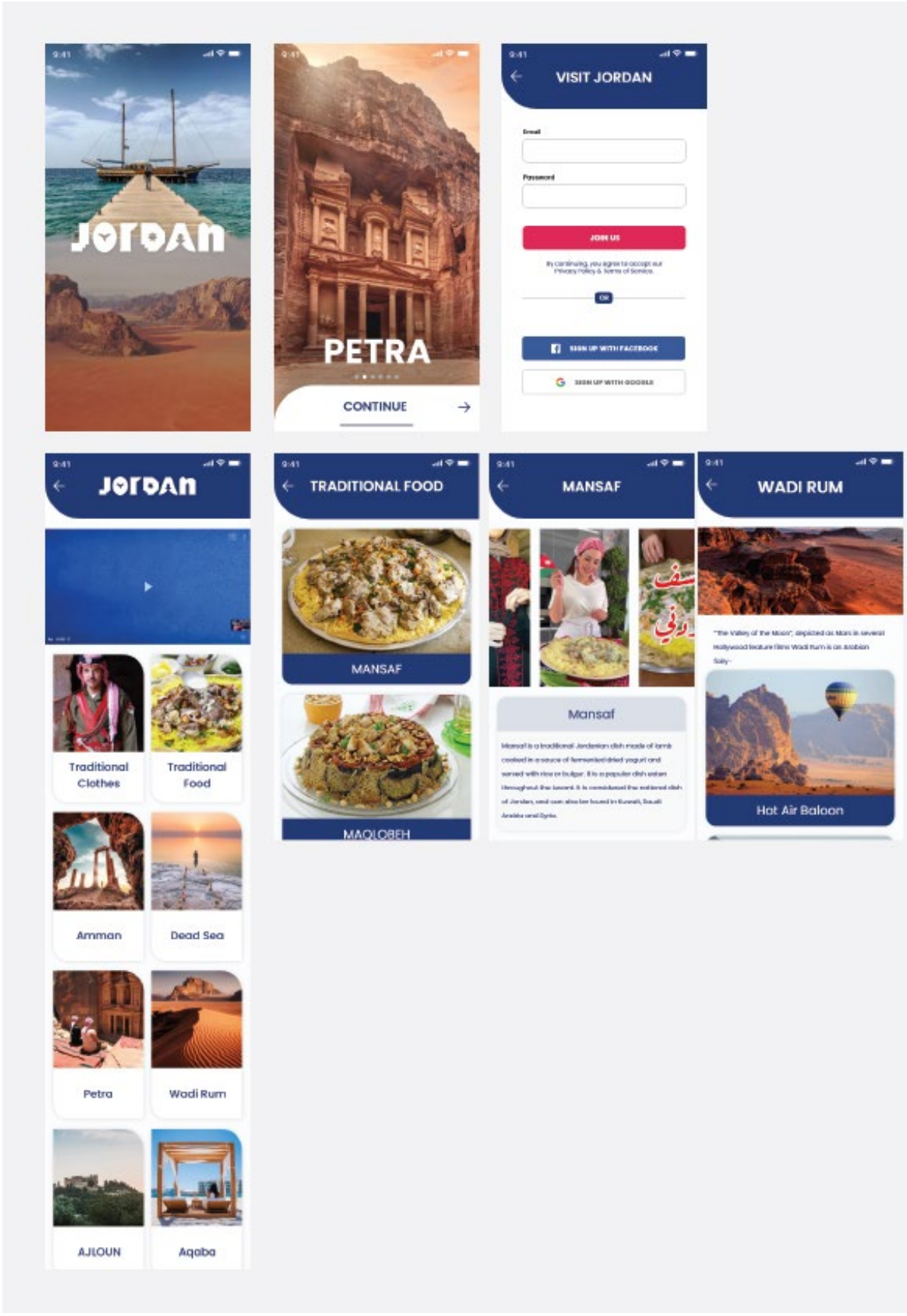
Over 14 days and about 20 working hours the students were requested to prepare 5-7 UI screens for Behance presentation. While doing the project, a day to day follow up and supervision was done through WhatsApp and e-mail for discussions and modifications.

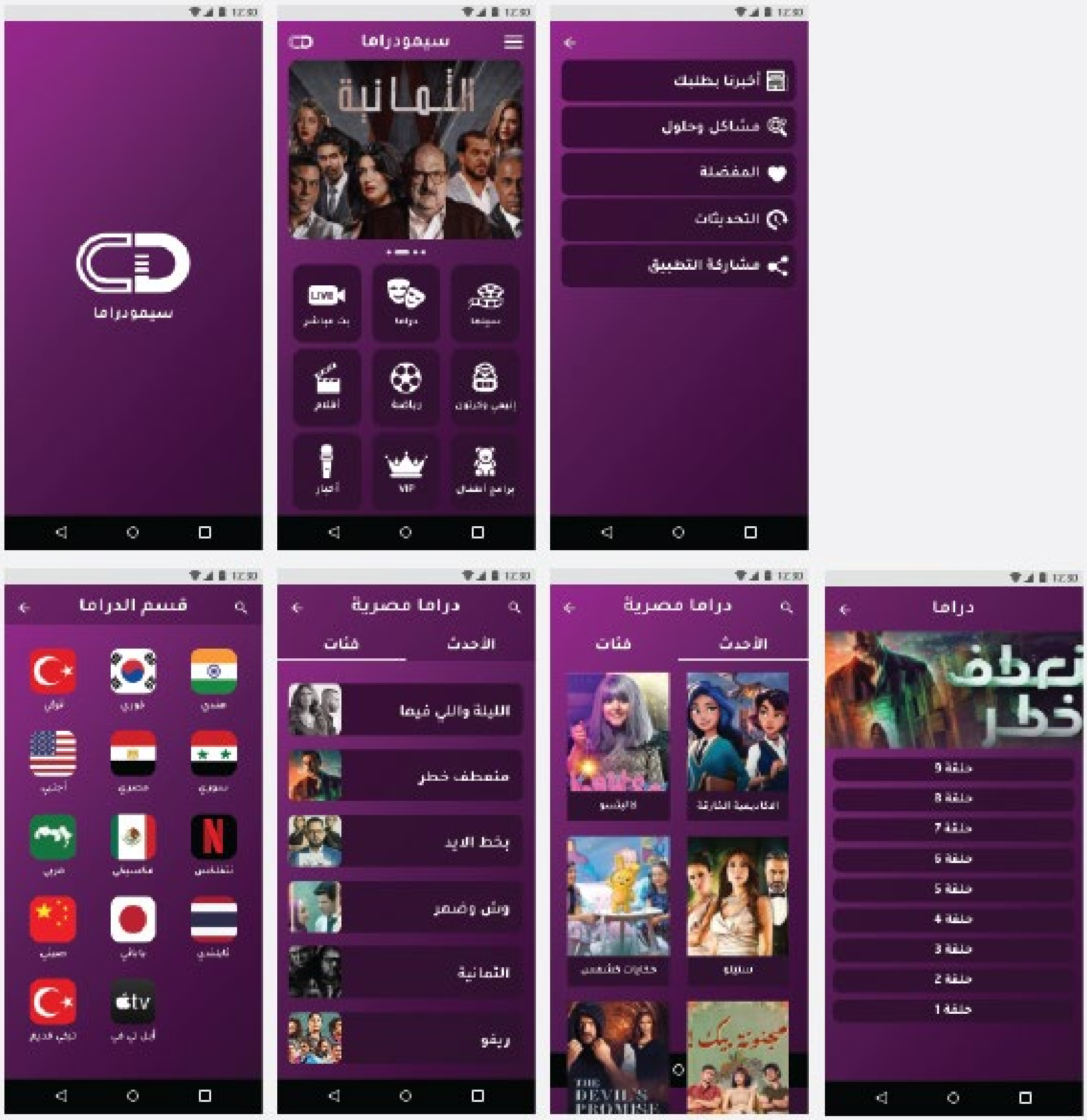
The projects were divided into two parts: new ideas and redesigned projects. All the 4 projects were done by students with no experience in UI Mobil app and it was their first time project.

Final Projects	
1- Eren App	
About the app	Jewelry app
Behance Link	https://drive.google.com/file/d/1vAUOy8ZQ_ijrC5PwJ-tYhZrSAEywYckE/view
App Link	https://www.figma.com/proto/xAUPGt9YW2PzV6eKpohdjW/eren-app-design-AMEND-1?page-id=0%3A1&node-id=52%3A1134&viewport=3725%2C1180%2C0.5&scaling=min-zoom&starting-point-node-id=52%3A1134&show-proto-sidebar=1
2- Anime sword App	
About the app	Anime app
Behance Link	https://drive.google.com/file/d/1W4nhXXDv-eOlcp8Awix0nC6Ll58_1245/view
App Link	https://xd.adobe.com/view/faff856a-da42-4ce4-b62e-9c6bf89bfd3d-afac/
3- Visit Jordan App – Redesign	
About the App	Tourism governmental app
Original App	https://play.google.com/store/apps/details?id=com.thaer.visitjordan&hl=en_US&gl=US&pli=1
Behance Link	https://drive.google.com/file/d/19FP67Z55jTV92J6wF7tbbQWXBevIbhYL/view
App Link	https://xd.adobe.com/view/a9e844ea-eeb0-4dbe-8e08-c84fe9e66ae6-fcbb/screen/349f7881-7dca-4882-a3cd-ec00ff02f7b5/
4- Cimodrama – Redesign	
About the app	Free movie app
Original App	https://cd-app.com/new/
Behance Link	https://drive.google.com/file/d/1lgqjoKpbjEDiZqQkZ7QIVjLgv_dIaBS5/view
App Link	https://xd.adobe.com/view/8ef41448-78cb-4983-8765-55cade705fb0-dba7/


elegance
start shopping
Payment
Elen Ahmad
Rings
Rings
Golden twin rings
hello
How can I help you TODAY


ANIME
SWORD
Email or username
Password
Forgot Password?
LOG IN
Create Account
HOME
Last added
Random Animes
MOST POPULAR
FROM YOUR WATCHLIST
Anime Show by
Top View
Year
Season
Global Rating
Complete
Alphabetical
Age classification
Save list
Watching now
Watch later
Watched
EPISODES
MORE LIKE THIS
EPISODE 165
EPISODE 166
CONTINUE WATCHING


JORDAN
PETRA
CONTINUE
VISIT JORDAN
Email
Password
JOIN US
OR
SIGN UP WITH FACEBOOK
SIGN UP WITH GOOGLE
JORDAN
Traditional Clothes
Traditional Food
Amman
Dead Sea
Petra
Wadi Rum
AJLOUN
Aqaba
TRADITIONAL FOOD
MANSAF
MAQLOBEH
MANSAF
Mansaf
WADI RUM
Hot Air Baloon


سيمودراما
سيمودراما
أخبرنا بطلبك
مشاكل وحلول
المفضلة
التحديثات
مشاركة التطبيق
قسم الدراما
دراما مصرية
فئات
الأحدث
الليلة واللي فيها
منعطف خطر
بخط الايد
وش وضهر
الثمانية
ريفو
دراما مصرية
فئات
الأحدث
دراما
حلقة 9
حلقة 8
حلقة 7
حلقة 6
حلقة 5
حلقة 4
حلقة 3
حلقة 2
حلقة 1

Appendix (M)


Introduction
Background
Problem Statement
Not all graphic design syllabus in Jordanian universities have any specialized course on designing UI Mobile App, resulting in graduates without any background in this subject.So, they do not meet the market needs
Thesis Question
1-What is the effectiveness of the new experimental educational syllabus for teaching user interface mobile app design for visual communication design students in Amman-Jordan?
2-How effective is the new experimental syllabus for teaching user interface mobile app design in improving students' knowledge and skills, and what areas of the syllabus need to be improved?
3-How does the new experimental syllabus for teaching user interface mobile app design impact the level of graphic design students' ability to design UI mobile apps?
Research Objectives
1.Building up a new experimental syllabus for teaching user interface mobile apps with a modern measurable learning procedure.
2.Evaluating the effectiveness of a new experimental syllabus for teaching user interface mobile app design to students in order to improve it.
3.Evaluating the graphic design student's level in designing UI Mobile App after the new experimental syllabus.
Significance of the Study
1- This study can be useful for educational institutions like universities and colleges
2- Beneficial for new start-up companies,which need to train their employees
Literature reviews
User Interface and User Experience
User Interface Design Principles
The structure principle
The simplicity principle
The visibility principle
The feedback principle
The tolerance principle
The reuse principle
Learning and Instructional Design Theories
Instructional design theories
Situated Cognition Theory
The ADDIE Model
Bloom's Taxonomy of Learning Objectives
The SAM Model
Project-Based Learning theory
Cognitive Load Theory
Research Methodology
1 Problem identification
Jordanian previous studies related to the status of design syllabus in Jordan
All the previous studies emphasized the importance of new up to date syllabus to be in line with the industry. Which support our thesis directly.
Pilot Study (73)
collecting data from Jordanians (Academic designers) who are graduates from 4 private universities: Middle East university, Philadelphia university, Al-Zaytoonah University and Applied Science university
This pilot study is designed to ask about:
1- The availability of specialized academic course on UI mobile app design at University
2- The availability of non-academic course on UI mobile app design
3-The demand of an intensive theoretical and practical training program specialized in UI Mobile app design
4- The preference of face to face or online course
2 METHODS
Population and Sample
Research Design
Research Instrument and Data Collection
Data Analysis
Research Ethics
3 Syllabus Development (Cycle One)
Review previous syllabus
We choose 13 online available syllabus and make a comparison between them from different perspective.
Summary of the chosen syllabus
After reviewing previous UI mobile app design syllabus, we notice these essential 4 points
Grouping similar feature together
The goal of this phase is to design a syllabus falls in line with all previous syllabus.
Finalize the required feature for our syllabus
The syllabus should be mix of theoretical and practical together, teach adobe XD, export final project, ...etc
Course syllabus and schedule
Syllabus philosophy, Course objectives, Course outcome, Course schedule
First draft syllabus
3 Syllabus Development (Cycle Two)
Expert interview (5)
send the first draft syllabus to 5 expert specialized in (UI design) to make an expert interview. Which we designed to review and develop the first draft syllabus suggested by the researcher. The interview was done online through Email and Zoom.
The final syllabus
Exclusive development
These developments are created and designed especially for this course. As a result, this makes the syllabus unique of its kind. such as: Ready to use free material, UI case study checklist tool, Export section ...etc
Building the content of syllabus
The content built as pdf presentation with videos, in addition to attached free book ,and ready to use free materials which designed and collected by the researcher. All the data collected from latest book, articles, thesis and websites.
Agreement with Masaq Academy to apply the syllabus as training course through them
Apply the course on students
Finish the course and get out with final projects (4)
Every student should do a final project, which will be to design 5 to 6 screens for mobile app design, and then they should present it through the template from ready to use free material. After that it will be a live dissection
4 Syllabus Evaluation
Standards to evaluate the syllabus & reference for the selected criteria
Theoretical
Practical
Productive
Designing
Ready to use free materials
Fits with market industry
Demand on the training program
Fitness to the academic standards
Time is suitable for the program
Preference : on line or face to face
Evaluating the trainer
Recommendation
After Applying the syllabus
Expert's evaluation (7)
(through final projects)
After the expert review the final projects the expert should answer the post-test questionnaire which design to measure if the final projects as outputs of the course are in line with the specific criteria or not and that will indicate about the effectiveness of the syllabus
Student's Evaluation (26)
(At the end of the course)
After finishing the course and finishing the final projects students should answer the questionnaire which design to measure the effectiveness of the syllabus
Results & Conclusions
4 Syllabus Evaluation
Summary of research findings
1- Building up a new experimental syllabus for teaching user interface mobile apps with a modern measurable learning procedure.
2- Evaluating the effectiveness of a new experimental syllabus for teaching user interface mobile app design to students in order to improve it.
3- Evaluating the graphic design student's level in designing UI Mobile App before and after the new experimental syllabus.
3- Evaluating the graphic design student's level in designing UI Mobile App before and after the new experimental syllabus.
Contributions
Theoretical contribution
Practical contribution
Methodological contribution