

# *Design Thinking-Based Internship; An Efficient Alternative for Hiring Product Designers*

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## **A**bstract

*To fill a specialized job position, organizations should provide onboarding training. Therefore, investigating more rapid and efficient training is unavoidable. This case study reports a method based on Design Thinking for training product designers during an internship to prepare them for a professional job position. This training, including the theory and practice, was conducted twice, with each taking three months. We organized two intern groups containing four participants under a senior product manager's supervision as a mentor in — Bahar E-Commerce Company— a Fintech startup. After completing these internships, five external referees evaluated the trainees' skills such as problem determination, ideation, design thinking, user experience, user interface design and product evaluation. In addition, the result of their design project was evaluated with real users. The results showed that trainees could conduct a design project at a professional level, offering great value to startups. On the other hand, the internship was more time-effective and cost-effective than onboarding a new employee and provided better compliance. For the trainees, applying the Design Thinking approach via an actual project in a startup was a fast way to become an expert in product design.*

## **K**eywords

*Design Thinking, Internship, Product Design Learning, Design Education.*

## Introduction

Although hiring interns for organizational purposes is not a new approach, it is now more popular than ever (Dobratz et al., 2015; Galloway et al., 2014). The internship history can be traced back to apprentice merchants in Europe or even Aristotle and Confucius' teaching traditions (Maertz et al., 2014). Nowadays, an internship means a work experience offered by a company with or without payment for a limited period (Paine, 2017; Maertz et al., 2014).

As this research shows, digital startup companies should consider hiring trainees more than before (Nelloh, 2017). Both the companies and the interns may benefit from internship programs (Maertz et al., 2014). 74% of companies offer a full-time job to their interns (Bates, 2021), and 83% of them who hire their interns are quite fulfilled with it. (Davis, 2010) 83% of these employees will stay more than five years with the organization which trained them in their professional career (Xccelerate, 2020). The duration of hiring and training a new employee to their complete productivity is estimated to be 5-8 months based on different reports (ERE Media, 2015; Xccelerate, 2020; Rollag et al., 2005). Also, as can be noticed in this study, offering an internship before hiring new employees can significantly decrease it.

For companies, internships reduce the labor cost (Galloway et al., 2014; Green et al., 2011; McKenzie et al., 2015), keep the company up-to-date (Ismail, 2018), reduce overall employee workload (Maertz et al., 2014) and ultimately provide an excellent opportunity to find younger (Wachman, 2010; Holyoak, 2013), more motivated (Dobratz et al., 2015; Coco, 2000; Gault et al., 2000) and more talented employees who may be more loyal to the company (Dobratz et al., 2015; Crumbley & Sumners, 1998; Knemeyer & Murphy, 2001).

For trainees, the internship allows them to be trained in a natural environment, to build their professional network (Dobratz et al., 2015) and master soft skills such as communication, team-work and creativity (Ismail, 2014; Galloway et al., 2014). Also, it helps to increase their confidence and self-efficacy in workplaces (Dobratz et al., 2015; Elarde and Chong, 2012) and enhancing their chance of getting hired (Nunley et al., 2016).

However, the benefits mentioned above can only be realized if the company has capable mentors and suitable methods to lead the interns (Ward et al., 2009; Holyoak, 2013). It has been observed that having design experts teach the students and assess their projects can be profitable (Raviv, 2015). There are several ways to teach trainees, but the Design Thinking method is one of the most efficient ones (Brown, 2009; Scheer et al., 2012). Design thinking is an iterative, progressive, human-centered and solution-based approach to identify and solve problems by focusing on prototyping and learning from mistakes (Nielsen & Stovang, 2015).

One of the early usages of the term *Design Thinking* was in Peter Rowe's 1987 book, *Design Thinking*, which defined it as a creative action method. The notion of Design Thinking within the academic ambiance of design has been discussed for more than 30 years (Val et al., 2017).

Despite its name, Design Thinking is not all about designing (Johansson-Sköldberg et al., 2013). It has deviated from science-orientation to mindset-orientation theoretically and practically (Val et al., 2017). The process is also a combination of creative thinking and business thinking that can develop human-centered products (Chouyluam et al., 2021, p. 27).

Design Thinking has found its way into education, business (Brown, 2009) and management as it approaches problem-solving (Kimbell, 2011). The impact of design thinking on education, teaching and learning processes has been investigated in several studies. Glen et al. (2014) found that Design Thinking helped prepare students for their careers, especially in a dynamic and uncertain environment and suggest that business schools adopt this method. Neck and Greene (2010) describe the effect of the Design Thinking method on students' ability to practice entrepreneurship. Likewise, Brown (2009) explains Design Thinking as an accessible approach that brings innovation to education, business and other fields.

The value of product design has been observed since the 1980s (Okudan & Zappe, 2006). Later, Shafqat et al. (2019) investigated a direct correlation between product design projects' success and the organization's growth. As Daniel Raviv found, combining product design learning with hands-on activities such as lectures, discussions and problem-solving exercises makes it easier to understand the concept (Raviv, 2015).

The present study reports a Design Thinking based process for training interns in startup companies pedagogically. Our case study focuses on Bahar E-Commerce Company, an Iranian Fintech startup. Eventually, the effect of the internship program is examined on both the company and trainees.

## Method

The company's demand for product designers has led the authors to use the Design Thinking approach to resolve this issue. For this purpose, we created an empathy map and stakeholders map after estimating cost and gain. Based on the result, a decision was made to hire trainees and train them.

### 1. Selection of Trainees

Initially, a call was made to hire trainees, which resulted in 400 people posting their résumés and motivation letters. Seventy were selected and further reviewed; thirteen were invited to be interviewed. The selection in this step was based on how familiar they are with design concepts, UI/UX design and research methodology. As a result of a face-to-face interview, two were accepted to begin the training based on their passion and experience. They were students or had recently been graduated. These people had not received any academic education in design but were interested in becoming a designer.

The selection and training process has been repeated twice; the first began in May 2018 for two trainees and the second in May 2019 for two others.

### 2. Training of the Trainees

The apprenticeship process was completed in three months, including four stages: basic concepts training, skills acquisition, soft project implementation and actual project implementation. All of this was done under the mentorship of a professional product manager who had academic education in design.

The purpose of the first phase of the internship was to learn the basic concepts. First, they were given a design concept as a keyword and had 90 minutes to find out about it by searching the internet or a library. After this brief research, the trainees provided a brief explanation of the concept. During the presentations and afterward, the understanding of these concepts was developed through discussion. At the end of the presentation session, the trainees did a hands-on exercise on the same keyword to touch the idea.

The purpose of the second phase was to help the trainees gain skills. In this process, the trainees acquired three categories of skills: research skills, prototyping skills and testing and getting feedback skills. Research skills included tools and methods for gathering information and user recognition for starting a design process, such as interviewing, building a persona, creating a customer journey map, developing empathy maps, and many others. In the field of prototyping skills, they were trained in tools that are suitable for making a prototype as well as experiencing tools ranging from paper and pen to Adobe XD and Sketch. In the field of test and feedback, the trainees came across examples of tools that worked to monitor and analyze user behavior, such as Heatmap tools, Google Analytics and actual usability tests on a startup product.

In the third phase of the training, a soft project was defined for the trainees to solve a problem in the Bahar E-Commerce Company product. The problem-solving process involved research, innovation, finding and developing a solution, prototyping, testing the prototype, analyzing test results, preparing a list of findings and then optimizing the prototype and repeating it. In the process, a mentor accompanied the trainees to guide them.

After these three steps, an actual project for the trainees was defined, which had a real client. They first met the customer, then, through iterative discussions, developed their understanding of the client’s fundamental needs and convinced them. Thereupon, they wrote a design brief and did some initial studies. The cycle of design, prototype, test and feedback was repeated to reach a customer’s valid product.

### 3. Evaluation of the Trainees

Different methods were used to evaluate the effectiveness of this training method;

In the first stage, a five-member team of referees was formed to assess trainees’ final project. A call was made on LinkedIn to choose the referees from educated and experienced chief product officers and product managers. The project was shown to the judges without mentioning that trainees did it, and they were asked to give it a grade between one to ten. The benchmarks for the evaluation included: A) Performance quality such as design process and output, B) UX design, C) UI design and D) A good understanding of development opportunities. The weighted objectives method was used for the final measurement. Each indicator was weighted between one to five, in which the trainees’ output was scored from one to ten. Scores less than five were unacceptable, between five and seven acceptable and more than seven were great. The scores are shown in [Table 1](#).

**Table 1:** The referees’ scores to the trainees’ project.

	A	B	C	D
Referee 1	6	7	5	8
Referee 2	7	9	7	8
Referee 3	9	9	8	9
Referee 4	7	8	6	9
Referee 5	8	9	7	10

In the second stage of the evaluation, the final product of the trainees’ projects was compared to the previous version of the same product, designed by a team of experts. The comparison looked at how much more popular the new design was in terms of the user feedback on Google Play and Cafe Bazaar, an Iranian android market (<https://cafebazaar.ir/>).

In the third stage, the course evaluation was also done by the trainees themselves. First, it examined how trainees felt about their progress as well as how they found their career paths. They were given a modified Likert questionnaire ([Figure 1](#)) and were asked to rate their skills from zero to ten on the skills they had been supposed to learn. Their instructor also completed the questionnaire, evaluating how much the trainees had improved in each skill. Then a list of training courses with similar content and internships in other startups was prepared; also, their content, duration and cost were compared with these training courses.

**Progress Assessment Questionnaire In Product Design**  
 Please rate each item from 1 to 10.  
 \* Required

Your Name \*:

1. I can write design brief *	Low	1 2 3 4 5 6 7 8 9 10	High
2. I can create a customer journey map*	Low	1 2 3 4 5 6 7 8 9 10	High
3. I can create empathy maps*	Low	1 2 3 4 5 6 7 8 9 10	High
4. I can create user flow*	Low	1 2 3 4 5 6 7 8 9 10	High
5. I can interview with users*	Low	1 2 3 4 5 6 7 8 9 10	High
6. I can run brainstorming*	Low	1 2 3 4 5 6 7 8 9 10	High
7. I can develop different features of a product*	Low	1 2 3 4 5 6 7 8 9 10	High
8. I can provide many ideas for the product*	Low	1 2 3 4 5 6 7 8 9 10	High
9. I can categorize ideas*	Low	1 2 3 4 5 6 7 8 9 10	High

10. I can check/study the possibility of ideas*	Low	1 2 3 4 5 6 7 8 9 10	High
11. I can think of the technical features of the product based on the company's capabilities*	Low	1 2 3 4 5 6 7 8 9 10	High
12. I can create prototype*	Low	1 2 3 4 5 6 7 8 9 10	High
13. I can work with a prototyping tool (Paper / Sketch / adobe XD/ ...)*	Low	1 2 3 4 5 6 7 8 9 10	High
14. I can develop the prototype with more detail*	Low	1 2 3 4 5 6 7 8 9 10	High
15. I can prepare a prototype close to the final product *	Low	1 2 3 4 5 6 7 8 9 10	High
16. I can take the usability test*	Low	1 2 3 4 5 6 7 8 9 10	High
17. I can check / study product usage statistics*	Low	1 2 3 4 5 6 7 8 9 10	High
18. I can identify the process of improvement/unimprovement of the product based on statistics*	Low	1 2 3 4 5 6 7 8 9 10	High
19. I can improve the product based on user feedback *	Low	1 2 3 4 5 6 7 8 9 10	High
20. I can work with the product team*	Low	1 2 3 4 5 6 7 8 9 10	High
21. I can work with the technical team*	Low	1 2 3 4 5 6 7 8 9 10	High
22. I can convince others into my idea*	Low	1 2 3 4 5 6 7 8 9 10	High

**Figure 1:** Modified Likert questionnaire.

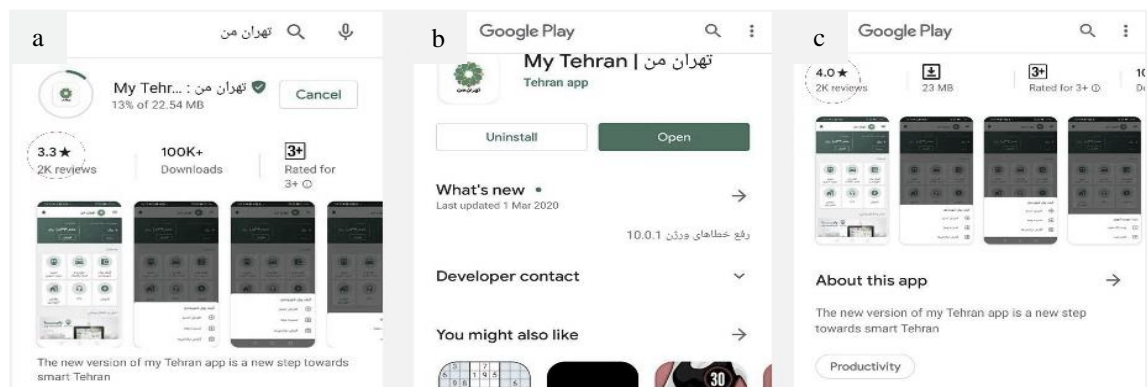
# Results

The result of the referees' judgment is presented in [Table 2](#). The criteria were given a weight of one to five based on their importance to the startup, which was A) five for the performance quality such as design process and output, B) four for UX design, C) four for UI design and D) three for a good understanding of development opportunities. The project was then weighed based on these requirements, and the trainee's average score was 7.71 — excellent.

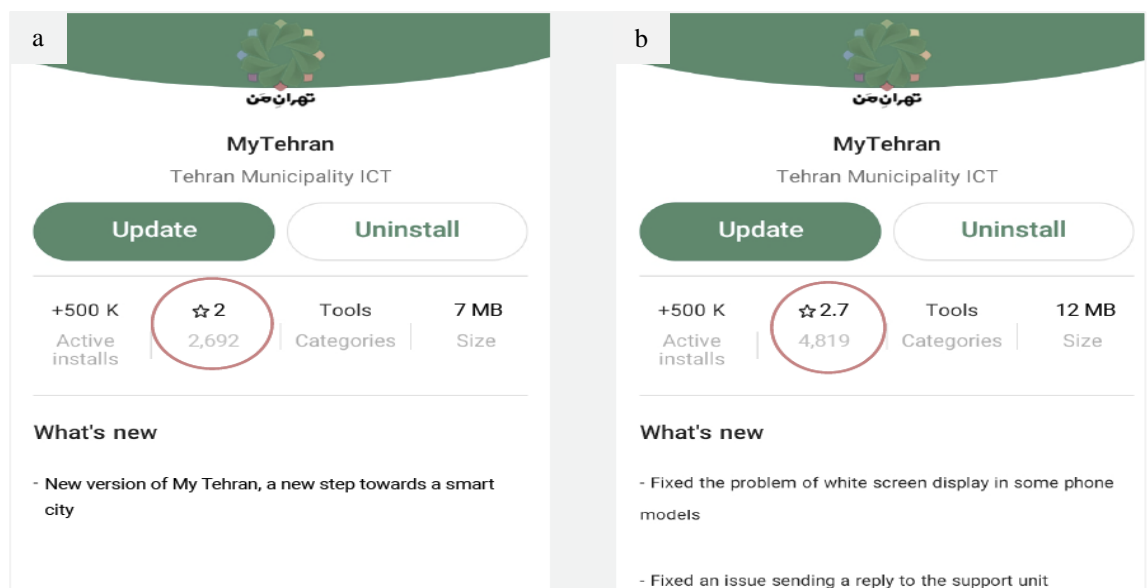
**Table 2:** The result of referees' judgment and the average score.

	A	B	C	D	Result	Average
Referee 1	30	28	20	24	102	6.37
Referee 2	35	36	28	24	123	7.68
Referee 3	45	36	32	27	140	8.75
Referee 4	35	32	24	27	118	7.375
Referee 5	40	36	28	30	134	8.375
Average					123.4	7.71

In the second stage of the evaluation, users' judgment about the trainees' results compared to experts' work based on their two online markets' scores. The product that the expert team released had a Google Play score of 3.3, which was upgraded to 4.0 ([Figure 2](#)) after being updated based on the interns' design. In Cafe Bazaar, the rating also grew from 2.0 to 2.7, shown in [Figure 3](#).



**Figure 2:** Comparison of Google Play scores. **a.** Before trainees' product launch 09/02/2020, **b&c.** After trainees' product launch 08/03/2020.



**Figure 3:** Comparison of Cafe Bazaar scores. **a.** Before trainees' product launch 09/02/2020, **b.** After trainees' product launch 08/03/2020.

The trainees then evaluated the course. The questionnaire results they completed at the end of the training are compared to the one they had filled at the beginning. The scores change of each item is shown in Figure 4, where the average overall score is increased from 2.943 to 8.66.

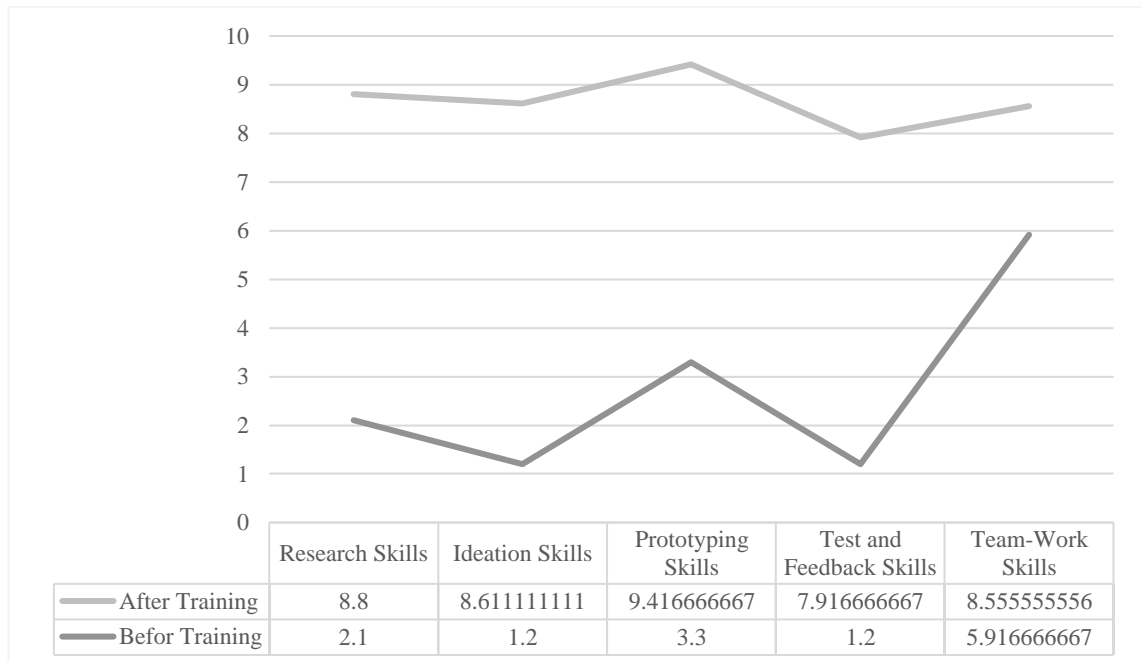


Figure 4: Comparison before and after the training process.

By comparing the internship content with similar courses in Table 3, it seems this internship’s content is worth nine million IRR; nevertheless, it was free for the trainees.

Table 3: Similar courses with the internship course. Prices were valid at the time of writing the article. They may vary now.

Course Title	Length	Price (IRR)	Course Topics	Course Link
Product design - Product Factory	66 Hours	32,990,000	Design Thinking, Service Design, Research, Marketing in Product, Product Management, UI Design/ tools, Typography in products	<a href="http://product-factory.com/">http://product-factory.com/</a>
UI/UX Design - Docent Academy	145 Hours	67,000,000	basic principles of UI design UX Design Theory, Research Methods, Testing/Validation/Usability, evaluation	<a href="https://www.docent.ac/courses/ux/ui-essential/">https://www.docent.ac/courses/ux/ui-essential/</a>
UI/UX Design – Academyca	51 Hours	34,000,000	Introducing UI/UX Design concepts, learning ADOBE XD software and UI/UX Design with practical project	<a href="https://www.academyca.com/uiux/">https://www.academyca.com/uiux/</a>
UX Training	90 videos	42,000,000 one year	UI/UX Theory and Design rules	<a href="http://online.uxtraining.com/">http://online.uxtraining.com/</a>



<i>Design Lab</i>	40 Hours	44,850,000	UX Research and Strategy, Interaction Design, Prototyping and Testing	<a href="https://trydesignlab.com/courses/">https://trydesignlab.com/courses/</a>
<i>Udemy</i>	24 Hours	1,500,000-29,250,000	UX & Web Design Master Course: Strategy, Design, Development, Mobile App Design from scratch with Sketch, UX Strategy Fundamentals	<a href="https://www.udemy.com/courses/design/">https://www.udemy.com/courses/design/</a>
<i>Product Bootcamp</i>	1.5 month	30,000,000	Hard and soft skills for launching a Startup	<a href="https://daneshkar.net/job/bIDLrM1nr0VB/">https://daneshkar.net/job/bIDLrM1nr0VB/</a>

## Discussion and conclusion

This research is a case study on the efficiency of in-service training based on Design Thinking in a startup setting. The training was held two times, and each time it took three months, during which a total of four trainees participated. A team of referees evaluated their work after the internship and measured their progress. The results indicated that this process is more cost and time effective and provides better compliance for both the startup and trainees than the usual recruitment process. This process could be generalizable for all startups.

This method is not an alternative to the academic approach; however, in this case study, it was more efficient than hiring experts because it cost less, and interns were better adapted to the work environment and their position compared to the previous experience. Although this three-month process may seem to be a long-term return for the organization, hiring new experts may take 5-8 months until they acquire full productivity (ERE Media, 2015; Xccelerate, 2020; Rollag et al., 2005). Furthermore, from the earliest stages, trainees began their work with more straightforward tasks and took on more serious roles as their training progressed. This group's output was more in line with the business capacities and more in tune with the organization's spirit.

Design Thinking is the basis of the method and content of this internship. Contents are designed in six steps: understanding, observing, defining the point of view, ideation, prototyping, testing and reflecting. On the other hand, the method can be analyzed as three parallel Design Thinking-based processes: the organization, the mentor and the trainees.

For the organization, every trainee is a prototype of an employee for a particular position. Instead of hiring, the organization can detect its specific needs and make a trainee closer and closer to it via iterations. Besides, the organization will better understand the internal knowledge/skill gaps.

Design Thinking-based training gives the instructor a clear path based on the organization's needs. After defining the point of view, the training process could be considered as a solution. Evaluating what the trainees perform compared with the organization's demands provides feedback to modify this solution, one step closer to satisfying the organization's requirements.

For the trainees, training would be applying the Design Thinking method which contains finding their needs, generating a point of view and making solutions for it, then prototyping and testing. Finally, in the reflect step, they would be evaluating if they have learned enough or not. The cycle would be repeated until they achieve their desired understanding and solution.

Compared to new-hired employees, trainees are less conservative to think out of the box, do trial and error, be creative and establish networks with all organization branches.

On the other hand, this process helps trainees choose a career path. Considering the choice of a career path as a product, this is a fast short-term process. The trainees go through a three-month course, evaluating their learning and skills by doing a project and ultimately learning from their training and experience, learn about the prospect of a career path and find out whether they are interested or not.

This research tried to show some benefits of the internship designed based on the Design Thinking method in a startup environment. Still, a more systematic and theoretical analysis is required to develop the Design Thinking-based method for teaching trainees in companies.

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