



REDEFINING UX DESIGN PEDAGOGY FOR INDUSTRY-READY GRADUATES: AN INDIAN HIGHER EDUCATION PERSPECTIVE

SAGAR KUMAR

(Asst. Professor)

Organization - CollegeDekho

E-mail id - sagaryaduvanshi55@gmail.com

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Abstract

The increasing digitalization of services and sectors in India has significantly raised the requirement of the professional User Experience (UX) experts. Nevertheless, educational institutions of higher learning are still struggling to deliver graduates who suit the industry demands. The current research looked into the applicability of UX design pedagogy in Indian higher education and the division between the training and the expectations of the professional competency. A mixed-method research design was selected, with the participation of the students, the faculty members, and the industry professionals in surveys, as well as reviewing the curriculum and assessing portfolios. The results indicated that students were competent in visual design, interface development, though, their skills in user research, usability, testing, accessibility design, and collaborative development practices were rather limited. Respondents in the industry, in contrast, prioritized problem solving, validation and work experience in the workflow as core competencies that entry-level designers should possess. Curriculum analysis also revealed further that majority of the programs, instead of having systematic exposure to live projects, internship and usability laboratories, focused on theoretical knowledge and software tools. The research thus presented an industry-based, studio-based pedagogical model that encompassed experiential learning, interaction with real-user, and interdisciplinary learning. The conclusion made was that UX education restructuring to human-centered and practice-oriented learning could become a key to graduate employability and would allow the institutions to produce industry-ready professionals who would effectively contribute to the changing digital economy.

Keywords: User Experience (UX) Design, UX Education, Higher Education, Industry Readiness, Curriculum Design, Design Pedagogy.

1. INTRODUCTION

The fast digitalization of the Indian economy has made an enormous impact on the character of professional competencies demanded in the technology and services sphere. The campaigns and programs related to digital governance, development of startups, access to internet and the use of smartphones have heightened the demand of digital products that are efficient, accessible and easily usable. In this world, organizations are realizing more and more that product success is not based on technical performance only but also on usability, accessibility, and the general user satisfaction. Consequently, User Experience (UX) design has become a very important field in the evolution of digital platforms in the realms of e-commerce, fintech, healthcare technology, education technology, and government service systems.

The UX design is not limited to visual interface design, but a multidisciplinary involvement of psychology, human computer interaction, design thinking, usability engineering and business understanding. A professional UX designer is supposed to carry out user research, study user behavior, establish problems, devise personas, design wireframes and prototypes, test usability, and test solutions through iterative testing. The position thus involves analytical thinking, ability to research and problem solving together with cooperation in solving problems on top of creativity.

Although the need of UX professionals is increasing, there still remains a significant difference in the skills acquired in higher education and those expected in the field. The traditional design or computer science programs that are pursued by many Indian higher education institutions do not focus on human based research and practical solution to problems but on software tools and theoretical understanding. In the majority of cases, students are taught interface design and visual beauty, but get little practice in usability testing, accessibility, teamwork processes, and work with actual users. This means that the graduates that come into the job market are often in need of extra training in the industry before they are able to undertake any professional UX duties on their own.

Employers are also demanding that entry-level designers should have the ability to conduct user interviews, produce research documentation, prototyping, validation of design decision by testing, and to work as members of agile development teams. Nevertheless, most academic programs are based on classroom tasks and speculative projects, which means portfolios that are not justified by research and not substantiated in practice. This discrepancy means that the current pedagogy is not effective enough in providing the skills necessary to prepare graduates to enter the industry.

1.1. Objectives of the Study

The study has the following research objective:

- To analyze the effectiveness of current UX design education in Indian higher education institutions.
- To identify skill gaps between graduating students and industry expectations.
- To propose a pedagogical framework for producing industry-ready UX graduates.

2. LITERATURE REVIEW

Satpathy, et al. (2020) explored the application of design thinking in the environment of the fourth Industrial revolution and how it relates to graduate preparedness. The authors claimed that the current industries needed graduates who were not just technologically sound but also able to be innovative, creative and problem solvers. Their analysis showed that the conventional education systems placed a lot of emphasis on theoretical learning and memorization skills thus constraining the students to solve real life problems. They stated that the addition of design thinking techniques, including empathy construction, problem definition, ideation, prototyping, and testing, had a beneficial impact on the adaptability and the preparedness of the students to enter the industry. The research proposed that to equip graduates with modern professional conditions, experiential learning and interdisciplinary exposure were necessary.

Gray, et al. (2020) examined the connection between user experience, instructional design and learner engagement. Their study examined the application of the UX principles to the learning setup in the schools to enhance the learning process. The authors discovered that usability, accessibility and student-centered interaction designed educational experiences enhanced student motivation and understanding. They noted that a designed learning experience acted like a designed digital product where usability and feedback systems facilitated significant interaction. This research revealed that the UX principles have the potential to improve pedagogy, not as an object of learning only, but also as a system of structuring teaching and learning processes.

Vorvoreanu, et al. (2017) offered a combined studio pedagogy model to develop UX education. The researchers reviewed current design teaching procedures and found that teaching students through lectures was not effective to prepare them to professional practice in the field of UX. They stressed the power of studio-based learning settings in which students were tasked with real or realistic problems in design, were able to collaborate with others, and got feedback in an iterative manner. Their results showed that project-

based learning, critique-sessions, and reflective practice were of great importance to enhance the research abilities, the communication as well as the design reasoning of students. The research concluded that UX education would be similar in nature to professional processes, such as teamwork, iterative prototyping, and user validation.

Lee, et al. (2023) examined community-based user experience pedagogy and studied how the social context in the real world impacted the learning of students in UX education. The authors talked about a method of teaching where students engaged in community organizations and non-profit organizations to come up with solutions to real user problems and not imaginary classroom challenges. Their results revealed that community-based endeavors promoted empathy, ethical mindfulness, and understanding with regard to various classes of users. The students are said to have acquired better research skills, communication skills, and reflections, due to the direct interaction with the stakeholders and end users. It was also noted in the study that this form of engagement enabled students to be aware of social responsibility and inclusiveness in the design practices. The authors, in general, came to the conclusion that community-engaged pedagogy increased the effectiveness of experiential learning and equipped students with a more professional experience of UX practice by exposing them to the real-world design problems and teamwork setting.

3. RESEARCH METHODOLOGY

This paragraph covers the methods used to study the efficiency of UX design pedagogy within Indian institutions of higher education and its conformity with the industry demands. The methodology was created such that it would include both the quantifiable competency outputs and contextual educational outputs. Hence, quantitative and qualitative data were gathered and evaluated to gain an in-depth insight into the existing teaching-learning environment and readiness of graduates.

3.1. Research Approach and Design

In order to identify the academic-industry gap UX education, the study used the mixed-method research design based on quantitative and qualitative analysis. The quantitative aspect was used to determine the degree of competency and readiness in the students whereas the qualitative aspect was used to investigate the curriculum structure, teaching practices, and professional expectations.

The research design is cross-sectional in nature since the data were obtained based on the participants at one time and not over a few semesters or years. The design was suitable, as it was aimed to obtain an evaluation of the current state of the UX pedagogy instead of its development in the long term.

3.2. Population and Sampling

The study was centered on the stakeholders that are directly related to UX education and employment. The choice of three groups was made, as they represent the learning system and the job market at the same time: students (learners), faculty (educators), and industry professionals (employers). A purposive sampling technique was used. Interviewees were picked because they participated in teaching, learning, or professional practice in UX. The reason why final-year students were chosen in particular is due to the fact that they are nearest to joining the workforce and thus may be the most appropriate to reflect employability readiness.

Table 1: Distribution of Respondents by Stakeholder Category

Respondent Category	Sample Size
Final-year UX Students	120
UX Faculty Members	30
Industry UX Professionals	40
Total Respondents	190

Along with the survey participants, the curricula of 12 Indian institutions which provide the UX/UI course or the interaction design course were analyzed. In addition, 50 student portfolios were checked to check competency of practical skills and industry readiness.

3.3. Data Collection Methods

Various data sources were considered to make the findings reliable and in-depth. The application of more than one method facilitated the triangulation that enhances the accuracy of the research by confirming findings through the various types of evidences.

- **Structured Questionnaire:** The structured questionnaire was designed using five-point Likert scale (1 = Very Low, 5 =Very High) and administered to students, the faculty, and industry

professionals. The tool was used to measure the perceived competency, teaching effectiveness, and graduate employability preparedness.

- **Semi-Structured Interviews:** The interviews were held with the UX professionals employed in IT organizations, startups, and product organizations. The interviews covered the expectations of the industry in hiring, skills required, and shortcomings that are apparent in new graduates. The duration of every interview was about 20-30 minutes.
- **Curriculum Analysis:** The 12 institutions were analyzed in terms of the course syllabi, assessment patterns and course structures. The existence of user research training, usability testing, accessibility design, internships, and elements of project-based learning were investigated in particular.
- **Portfolio Evaluation:** The portfolio of 50 students was rated using a common rubric. The assessment was done in research documentation, persona development, wireframing, prototyping, usability validation, and design justification.

3.4. Variables of the Study

The researchers evaluated how effective UX pedagogy was by using competency-based measures. These variables are fundamental abilities that are necessary in professional practice of UX and are usually evaluated when recruiting in the industry.

- User research skills
- Wireframing and prototyping skill.
- Capability of usability testing.
- Teamwork and cooperation skills.
- Inclusive design awareness/accessibility.
- Industry tool proficiency
- Exposure to internship and real-projects.

3.5. Instrument Reliability and Validity

Prior to the administration of the questionnaire, their quality and accuracy were confirmed. Three UX educators and two industry practitioners were able to review the questionnaire items to make sure that they were content-valid and relevant.

They were performed on a small sample of 20 respondents in order to find out the areas where there were ambiguities and thus gave them more clarity. The test of reliability was done using Cronbachs Alpha which yielded a coefficient value of 0.86. This value means that there was high internal consistency and thus the instrument was appropriate in measuring the levels of competency.

3.6.Data Analysis Techniques

The responses were coded and statistically analyzed after data collection. Quantitative responses were analyzed using descriptive statistical methods whereas the Interpretation of qualitative interview responses was through the use of thematic analysis. The methods of analysis were the following:

- Frequency and per cent analysis.
- Competency analysis of mean score.
- Academic expectation gap analysis versus industry expectation gap analysis.
- Thematic analysis of the interview summaries.
- Portfolio scoring rubrics analysis.

These results were presented in the form of tables in order to compare the level of competency and employability readiness clearly.

4. RESULTS

The level of competencies of final-year students enrolled in the UX degree was examined to determine the extent to which present educational programs are capable of preparing them to work in practice. Students were requested to rate how well they had mastered the key areas of skills related to UX using a five-point scale, with greater mean scores representing better competence. Table 2 represents the results.

Table 2: Student Skill Competency Levels

Skill Area	Mean Score (out of 5)
Visual Design	4.1
Wireframing	3.7
Prototyping	3.4
User Research	2.6
Usability Testing	2.3

Accessibility Design	2.1
UX Writing	2.5

The results shown in Table 2 suggest that students exhibit a comparatively good degree of confidence in visual and interface-based activities including visual design (Mean = 4.1) and wireframing (Mean = 3.7), whereas prototyping is presented with the moderate degree of competencies (Mean = 3.4). By comparison, user research (Mean = 2.6), usability testing (Mean = 2.3), accessibility design (Mean = 2.1) and UX writing (Mean = 2.5) have significantly lower mean scores. In this way, Table 2 clearly indicates the fact that the students have stronger skills in the aesthetic and tool-oriented areas of UX design but are relatively poor in the research-oriented and evaluation-based practice. This is an indication that the existing academic training is focused on creating interfaces and not the human-centered validation procedure that is needed in the professional UX setting.

The level of competency that a graduate should ideally have in the different UX skill areas was rated by industry professionals to understand what the employers expect of entry-level UX designers. Each skill was rated on a five-point scale by the respondents with higher values of the means signifying high professional expectations. Table 3 shows the anticipated levels of competency that industry participants are expected to have.

Table 3: Industry Expected Skill Levels

Skill Area	Expected Level (Mean)
Visual Design	3.5
Wireframing	4.2
Prototyping	4.5
User Research	4.6
Usability Testing	4.7
Accessibility Design	4.3
UX Writing	4.0

Table 3 results demonstrate that the industry relatively lays less emphasis on solely aesthetic skills, like visual design (Mean = 3.5), and more emphasis on competencies that are process-oriented. The

expectation is high with regards to usability testing (Mean = 4.7), user research (Mean = 4.6), and prototyping (Mean = 4.5) and then accessibility design (Mean = 4.3), wireframing (Mean = 4.2) and UX writing (Mean = 4.0). Consequently, Table 3 shows clearly that employers believe that research, validation, and user-centered decision-making are more relevant than visual presentation. This evidence indicates that industry anticipates their graduates to back the design solutions with evidence-based approaches as opposed to basing their designs on interface aesthetics.

To measure the extent to which the academic programs scaffold the acquisition of UX skills, the curricula of several higher education institutions that successfully teach courses in UX/UI or interaction design were analyzed. The analysis was aimed at determining the existence of such crucial pedagogical elements of professional UX training as research practice, methods of validation, and exposure to the industry. Figure 1 summarizes the availability of these components within the institutions.

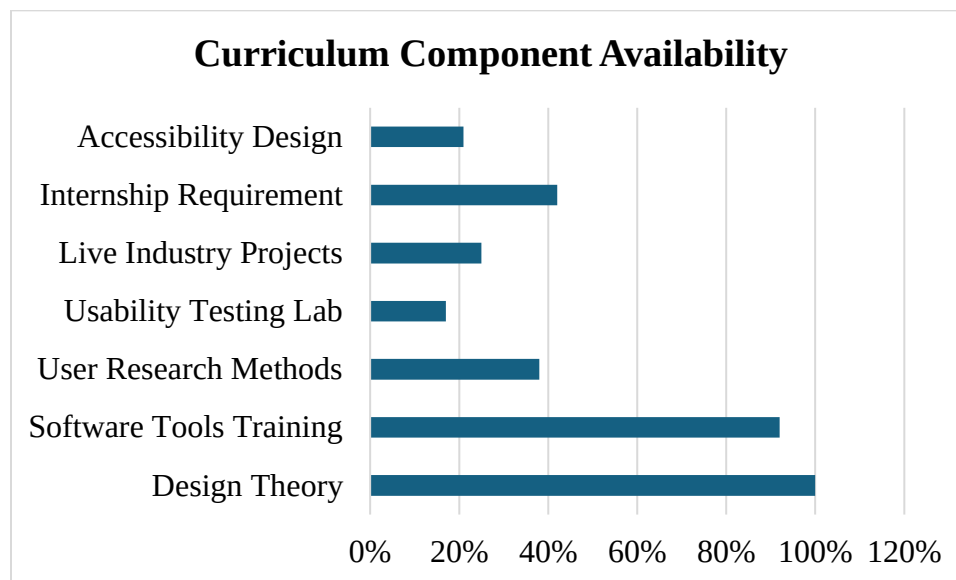


Figure 1: Curriculum Component Availability

The results in Figure 1 indicate that the basic courses are design theory (100%) and training in software tools (92%), are common among the majority of programs. Nevertheless, there is a strong lack of practice-oriented factors. User research methods are only taught in 38% of the institutions, and only 17% of programs have the usability testing laboratories. Likewise, live industry projects (25%), and forced internships (42) are not always part of the curriculum. Only 21 percent of institutions also have accessibility design. Thus, Figure 1 shows that theoretical and tool-based learning is clearly overvalued,

but the possibilities of experiential and industry-oriented learning are still lacking. This discrepancy indicates that the existing curricula lack sufficient support of the acquisition of applied UX skills needed to succeed in the workplace.

In order to measure the readiness of graduates to become employed, the respondents were requested to measure different indicators of employability readiness. The parameters were real life capacity, portfolio quality, working individually and being familiar with industry processes. Figure 2 shows the percentage of respondents who concurred with each statement.

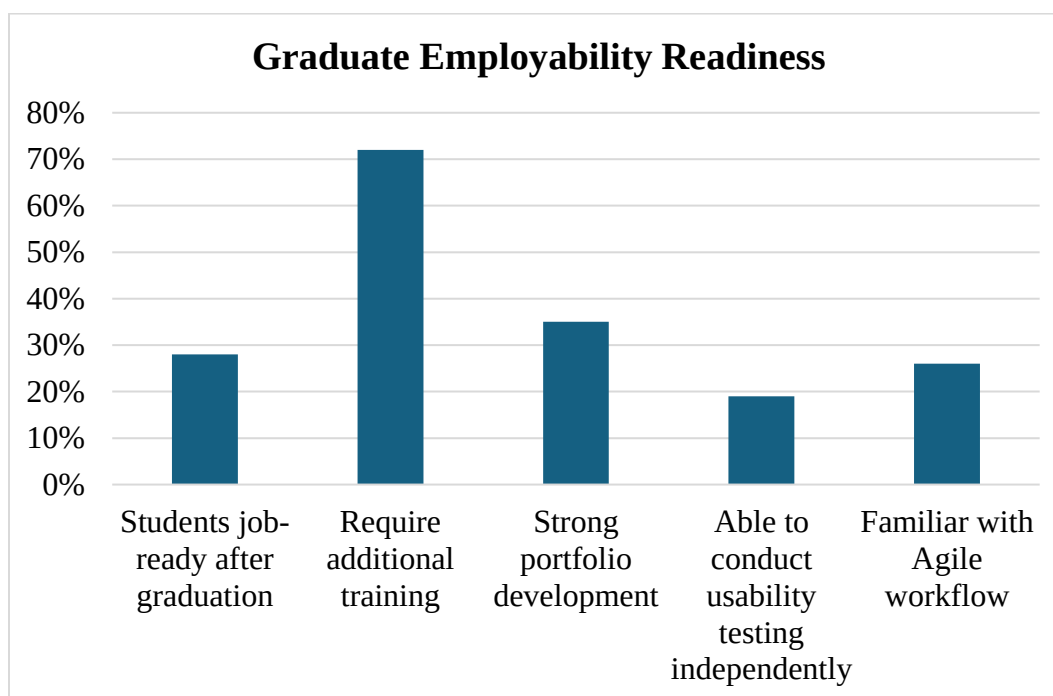


Figure 2: Graduate Employability Readiness

The findings, as depicted in Figure 2 indicate that only 28 percent of the respondents think that students are ready to work immediately after graduation, with the majority of 72 percent indicating that they need to be trained further before they can be given a chance to work in professional positions. The percentage that students build a strong portfolio is confirmed only by 35% and the percentage that graduates are able to carry out usability testing on their own is even lesser (19). Agreement on the practices of Agile workflow is also low at only 26%. Therefore, the pattern of graduates illustrated in Figure 2 strongly points to the fact that majority of graduates are not well prepared in practice and they need additional training that is

industry oriented. The conclusions are as follows: academic curricula are not adequate to teach students how to engage in the real process of UX and collaborative developmental setting.

5. DISCUSSION

The aim of the present research was to explore if the education in the field of UX design in the Indian institutions of higher learning provides students with sufficient training to serve in the profession and to understand the type of gap between the academic and the industry-based requirements. All the results are a pointer to a definite mismatch between what the students are being taught and what the employers need. Comparing the results of competency assessment, industry expectations, curriculum analysis and employability readiness, one can see a certain trend: existing pedagogy is focused on creating interfaces and using tools, but industry values research-based problem solving and the decisions regarding the validity of design.

The Table 2 competency results demonstrated that students were very confident on visual design and moderate on wireframing and prototyping. Nevertheless, the poorest scores were obtained in user research, usability testing, accessibility design and UX writing. These results indicate that learners are mostly trained on how to generate visual products, instead of how to learn user behavior and how to analyze solutions. By definition, UX is a practice that is human-focused and involves a systematic study of user needs, but the educational process seems to focus on aesthetics over user comprehension. This imbalance can be explained by the historical development of the UX programs in India, most of which have evolved out of graphic design or multimedia programs, and seldom out of human-computer interaction and research-driven fields of study.

This discrepancy is further explained in Table 3 by the expectations of industry professionals. User research, usability testing, and prototyping were considered the most significant competencies by employers, and the visual design was relatively less emphasized. This comparison between Table 2 and Table 3 shows a direct skill gap, that is, students are good at what the industry regards as secondary and poor at what industry regards as a necessity. Employers want graduates who can explain design choices with data, testing and iterative validation and students are mostly trained to deliver aesthetically pleasing interfaces with little to no evidence behind those choices.

This gap can be attributed to the analysis of the curriculum presented in Figure 1. In spite of the fact that design theory was taught in all institutions and that most of them included training on software tools, user

research methodology, usability lab, accessibility design, and real-world project were only offered by the minority. The few internships and reality assignments indicate that students are not exposed to real users in the course of their studies. The learners would not have the opportunity to practice interviewing, observation, or usability evaluation, which are fundamental professional skills, without actual users. Students therefore graduate with portfolios that show interface screens but do not indicate the research processes and validation.

The Figure 2 employability results are very much favoring this interpretation. Most of the respondents stated that graduates needed further training before they could work and very few respondents felt that students could undertake usability testing on their own. In the same way, having low acquaintance with Agile workflow implies that students are not introduced to collaborative workflow setting in their studies. This means that the students are being trained in academic programs that are not geared towards performance in the work place. The problem of large academia-industry gap is thus evidenced by the fact that employers have to spend more time and resources in training the newly hired designers.

The findings of the research are consistent with the works of other authors that have stressed experience-based and studio-based research. Previous research had already shown that project-based learning, iterative reviews and community involvement are ways of improving professional competence. The current results support the observations in the Indian context of higher education. The absence of hands-on exposure that was found during this research confirms the notion that UX cannot be successfully learned by means of lectures and software demonstrations. Rather, learning should entail the use of actual users, group effort and ongoing criticism as is the case with practice.

In accordance with the results, the research indicates that there should be a change in the pedagogy where the tool-centered pedagogy should be replaced by process-centered pedagogy. Instead of testing students based on the theoretical test, or on the basis of some of the assignments, they should be assessed based on the research documentation, usability validation, and reasoning of the problems. The teaching model can be achieved in the form of a studio, where students will be required to spend time in the studio, mandatory internships, usability testing laboratories, as well as interdisciplinary courses that will include a study of psychology and business. The given approach would permit the students not only to acquire the skills of design but also to gain skills in analytical thinking, the ability to communicate, and teamwork skills.

6. CONCLUSION

The present investigation examined the efficacy of UX design instruction in Indian higher education institutions and assessed the match for professional industry practices. The results indicated that a disparity existed between academic instruction and professional practices. Students could apply their skills to visually create interfaces and use the tools required for basic design; however, graduates were inept in important skills that would prove crucial for successful professionals, including user research, testing and discovery, accessibility, and participating in collaborative processes. The statements from practitioners indicated that evidence-based design methods and processes are crucial; however, academic training measured on tests and results for design students indicated that a majority of programs were theory-based and failed to expose students to actual users and projects to better understand the UX. This investigation showed that many emerging professionals needed retraining before being productive professionals. This research pointed to the need for changing from a tool-based approach for teaching UX design to a process-based and human-based approach. In order to become productive professionals and further enhance the Indian digital economy, it is crucial to reimagine and redesign the pedagogy for UX design by reflecting the practical nature of the field.

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