Ethics as Child's Play: Sensitizing Children Early On about Design Ethics

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Abstract The use of persuasion has become ubiquitous in design. It has been argued that persuasive design may coerce or manipulate users into acting in certain ways, which raises ethical concerns. However, designers are not being sufficiently educated about ethics within educational or professional institutions. On the other hand, design education is scaling up to enter school curriculums as well. We argue that there is a need to integrate ethics within design education in schools, to sensitize children towards ethics in design and to inculcate a critical perspective at an early age. To this end, we conducted a 4-hour session on the topic of 'persuasive design ethics' with 66 school children in Delhi as part of an introductory digital design course. In this session, we conducted a pre/post in-classroom design activity to observe the impact of ethics education on students' design outcomes. Through the analysis of pre/post activity sheets, we investigated how the effect of ethics education reflected in the design outcomes. Based on the findings, we argue for the importance of integrating ethics into design education as early as possible.

Keywords: design ethics, school education, persuasive design, ethics education

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1 Introduction

Persuasive design refers to design which intends to change people's attitudes or behavior [1]. The use of persuasion has become ubiquitous in interactive computing systems, such as websites and mobile applications [2]. However, recent years have seen the emergence of 'dark' persuasions, also known as 'dark patterns' [3]. Dark patterns are user interface designs which potentially intend to coerce or manipulate users into acting in certain ways [4]. Dark patterns have been argued to undermine users' autonomy, by 'making people do things they didn't mean to' [3] and tricking users into performing 'unintended and unwanted actions' [5].

The 'dark' use of persuasion in design may undermine users' autonomy and welfare [4]. Literature has argued that to tackle the issue of dark design, there is a need to integrate ethics education within design pedagogy and practice [6]. Many universities across the globe have started integrating ethics into technology curriculums, including design, computer science, and artificial intelligence curriculums [7]. However, Pillai et al. [8] argued that ethics resources suffer from low adoption rates because they are not yet part of a standard body of knowledge. In addition, much of these pedagogical interventions take place at the university level, whereas several students have had an exposure to design education in schools.

We argue in this paper that ethics-centric pedagogical interventions need to be introduced as early as possible in design education. Despite an increase in design education for school children in recent years, we have not come across reports of ethics being integrated into design curriculums. In this paper, we report the integration of ethics content within an introductory design course created for Class IX school students. We conducted a 4-hour session on 'persuasive design ethics' with 66 students in Delhi. Through a pre/post in-classroom design activity, we observed the impact of ethics education on students' design outcomes. Our findings suggest that students' design outcomes became more ethical after ethical considerations were introduced within the classroom. Based on the findings, we argue for the importance of integrating ethics within design education in schools.

2 Background

To imbibe ethics sensitivity amongst students, technology ethics curriculums are beginning to be taught in various universities across the globe. Casey Fiesler from the University of Colorado Boulder has compiled a live spreadsheet[1] of tech ethics syllabi taught in approximately 200 courses in computer science, human computer interaction, information science, communication, law and philosophy departments

[1] https://cfiesler.medium.com/tech-ethics-curricula-a-collection-of-syllabi-3eedfb76be18

in universities. Garrett et al. [9] explored two pathways for ethics content in technology education: standalone ethics courses and integrating ethics into technical courses, however, they did not conclude on the more preferable approach. Fiesler et al. [10] argued that integrating ethics into technical courses not only supports in-situ learning but also emphasizes to students that ethical practice is inherently a part of technical practice. Skirpan et al. [11] piloted novel ethics activities in a computer science classroom and found strong engagement and interest from their students.

While there is a strong emphasis being given to ethics education in the classroom, much of the literature focuses on university classrooms. However, recent years have seen a pedagogical shift within school education as well. School children are now being exposed to technology education. Programming classes are available to as young as elementary school children and are common at the secondary school level. Design education is also beginning to enter the schooling system [12]. We argue, in line with Fiesler's arguments [10], that there is a need to introduce in-situ ethics education in technology related curriculums being taught to school children. Teaching ethics in schools encourages students to think about ethics at an early age, potentially building more ethical practitioners of the future.

There is a lack of literature which reports on the integration of ethics content within design education in schools. In addition, even within university design education, there is a lack of reports about the impact of ethics education on students' design outcomes. There is a need to investigate whether ethics education can help in building ethics sensitivity in designers. There is also a need to understand how ethics education might impact students' design thinking processes, and shape their design outcomes. In this paper, we report on a classroom study designed to investigate the impact of ethics education on design outcomes of school students.

3 Research Methodology

This study was conducted as part of an introductory 20-hour design course created for Delhi Government schools. As part of this course, we created a 4-hour module on 'persuasive design ethics', which was covered in class over two 2-hour sessions.

3.1 Participants

66 students were enrolled in Class IX in the school in which these sessions were conducted. Class IX students are typically 14 years of age, however, the age of individual students was not collected. Two students did not attend either of the sessions and four students attended only one session. Therefore, we analyzed the classwork of 60 students (32 girls, 27 boys and 1 unknown).

3.2 Session Content and Activity

The first session was devoted to the topic of persuasive design. In this session, we familiarized students with the concept and applications of persuasion in design. We began the class with examples of digital platforms which students were familiar with, such as Instagram, Snapchat, Google and YouTube. We discussed examples of persuasive designs that many students had been exposed to, such as 'like' buttons on social media, popup advertisements and premium subscription popups. We discussed potential reasons for why a designer might want to persuade users, including commercial gains as well as helping people. After this, we introduced the class to different persuasive strategies. To make this part interesting and easy to understand, we walked the class through a flight booking website and identified ten 'persuasive strategies' within the flight booking process. We only exposed the students to these ten strategies. The persuasive strategies introduced to the class are listed in Table 1. The students were then asked to design an advertisement for a coaching center using one or more of the persuasive strategies discussed in the class. This was a pen and paper activity and the students were provided with A4 sheets, pencils and sketch pens. These activity sheets were submitted by the students.

Table 1. Persuasive Strategies Introduced in the Classroom

Persuasive Strategy	Examples
Rewards	discounts, incentives, cashbacks, points, free items, gifts, etc.
Fear	evoking fear through language, scarcity, urgency, etc.
Selling Addons	additional items, combo items, extra charges, etc.
Repetition	nagging, interrupting, reminding, etc.
Defaults	default charges, default addons, default settings, etc.
Visibility	font, emphasis, navigation, hidden information, etc.
Exaggeration	exaggerating value, quality, aesthetics, feasibility, results, etc.
Social Proof	feedback, testimonials, ratings, reviews, etc.
Positive Framing	positive language, biased language, etc.
Last Minute / Hidden Charges	full charges not shown, shown on last page, etc.

The second session was devoted to the topic of persuasive design ethics. We began the session by asking the students if they detected a sense of wrongness with the persuasive strategies taught in the previous session. We openly discussed students' raw perceptions of right and wrong regarding persuasion. After this, students were introduced to ethical considerations for the assessment of persuasive designs. Within this session, we introduced students to three ethical considerations which are widely discussed in literature – deception, coercion and manipulation [4,13]. We discussed examples of each, and the potential ways in which each concern could be operationalized in design. For example, deception could occur by lying or hiding information, coercion could occur though restrictions or pressure, and manipulation through tricking or misleading the user. We aimed for the students to internalize

these concepts in a way that they could later apply them to the normative evaluation of any design. At this stage, the students were asked to redesign their advertisements for the coaching center. They were again provided with A4 sheets, pencils and sketch pens. They were instructed to reflect on their earlier designs and be mindful of ethical concerns. They were asked to make their design as ethical as possible. On the backside of the A4 sheet, the students were asked to provide an explanation for the changes made. These activity sheets were also submitted by the students.

3.3 Analysis

We analyzed the pre and post activity sheets submitted by the students. The students made advertisements for various kinds of coaching centers, such as academic, dance, music, cooking, etc. The aim of this analysis was to a) identify the differences in design outcomes before and after the introduction of ethical considerations, and b) test if design outcomes became more 'ethical' after the students were exposed to ethical considerations. To fulfil these aims, we first conducted an evaluation of the differences in the usage of persuasive strategies between the two conditions. This was followed by an expert ethics evaluation of the activity sheets.

3.3.1 Evaluation of the Use of Persuasive Strategies

We conducted a qualitative and quantitative evaluation to identify the differences in the use of persuasive strategies between the two conditions. For each student, the authors observed and made notes of the differences in pre and post advertisement designs. The authors also used the students' own written explanations to identify the differences in the two sets of designs. Within the pre condition, the authors identified how students used the ten strategies to make their advertisement 'persuasive'. Within the post condition, the authors identified the students' approach towards altering those strategies within their advertisements to mitigate ethical concerns.

This was followed by a quantification of these differences. The aim of the quantification was to understand which persuasive strategies were significantly altered by the students in their attempt mitigate ethical concerns. The first author evaluated each pre and post activity sheet on the use of the ten persuasive strategies from Table 1. If an activity sheet contained the use of a particular strategy, it was rated on how 'aggressive' the use of the strategy was, on a 5-point Likert scale [1-Very Mild, 2-Mild, 3-Moderate, 4-Aggressive, 5-Very Aggressive]. For example, for the use of 'rewards', a 10% discount was rated as 1, and a 'free trial, free refreshments and free musical instrument after three years of enrolment' was rated as 5. This analysis was aimed at investigating the use of persuasive strategies in the pre and post design outcomes, and without any evaluation of 'ethics' at this stage.

3.3.2 Expert Ethics Evaluation

The expert evaluation of the activity sheets was done to understand whether design outcomes became more ethical in the post condition. Two design experts were recruited to evaluate the ethics of the advertisements designed by the students. The two experts were senior design researchers, and had each attended a 2-hour session on the ethics of persuasive design conducted by the authors of this paper. The experts were briefed about the persuasive strategies that the students had been exposed to and the nature of the activity. The experts were presented with the activity sheets of each student side by side for a comparative evaluation. For half of the students, the pre condition activity sheet was randomly displayed on the left, and for the remaining half it was displayed on the right. The experts were not aware which of the activity sheets corresponded to which condition. Based on the evaluative criteria of 'deception', 'manipulation' and 'coercion', the experts were asked to choose which of the two activity sheets they found more ethical.

4 Results

Out of 60 students who submitted both the activity sheets, four students were eliminated from the analysis because they did not stick to the brief. Out of these, three students designed an advertisement for chocolate, stationary shop, and scissors respectively, and one gave an overview of persuasive strategies without designing any advertisement. We analyzed the activity sheets from the remaining 56 students.

4.1 Evaluation of the Use of Persuasive Strategies

In the pre condition, we observed that students had used several persuasive strategies to make their advertisements more appealing and effective. However, when introduced to ethical concerns, we observed that students attempted to address these concerns by removing or reducing the use of the persuasive strategies. For example, 'rewards' was the most common strategy used by 44 out of 56 students. Within the 'rewards' strategy, some students removed the strategy altogether in the post condition, while others reduced the aggressiveness of the reward (one of the students changed a 1 month free trial to a 1 week free trial). Several students also eliminated the use of 'fear' strategy, removing limited time offers. They reduced exaggeration in their advertisements such as claiming marks guarantees, international facilities and time guarantees. They also reduced the use of the 'visibility' strategy, such as terms and conditions or additional costs written in small font.

To quantify these differences, we rated each activity sheet on the aggressiveness of the ten persuasive strategies used by the students. Each student used only a few

of the ten strategies which they had been introduced to. In Table 2, we report the number of students who used each strategy, and the pre and post average scores of aggressiveness of the strategy.

Table 2 suggests that there was a significant overall reduction in the use of persuasive strategies. A significant reduction was observed in the use of 'visibility', 'exaggeration' and 'social proof'. Although 'rewards' was the most frequently used strategy, a significant reduction was not found in its usage. This is potentially because given the normative criteria, 'rewards' such as discounts, cashbacks and free trials were not perceived to be unethical by the students. We did observe a reduction in the use of 'fear', but the effects are not significant potentially because this strategy was used only by 13 students (n=13). Similarly, we observed a reduction in hidden charges but because of low frequency (n=6), significant effects were not observed. We also observed that three students also used the 'trust' strategy in their advertisements, referring to their coaching center as 'verified' or 'approved' by a competent authority.

Table 2. Aggressiveness of Persuasive Strategies in Advertisement Design

Persuasive Strategy	n	Pre (S)	Post (S)	p-value
Rewards	44	2.59	2.50	0.76
Fear	13	2.85	1.69	0.22
Selling Addons	6	3.00	1.83	0.20
Repetition	0	NA	NA	NA
Defaults	0	NA	NA	NA
Visibility	26	2.88	1.65	0.01*
Exaggeration	25	3.52	2.16	0.01*
Social Proof	10	3.30	2.00	0.03*
Positive Framing	10	2.10	1.90	0.62
Last Minute / Hidden Charges	5	2.60	1.20	0.30
Trust	3	2.67	3.67	0.42
Overall Sum	56	7.27	5.18	0.00*

*significant at $p<0.05$, two-tailed, paired t-test

4.2 Expert Ethics Evaluation

In the previous section, we observed a significant reduction in the use of persuasive strategies, however, we did not evaluate whether the advertisements in the post condition became more ethical. We employed the expert evaluation method for this purpose. From qualitative observations, we found that a few students did not redesign their advertisements based on ethical considerations. Instead, they submitted nearly identical advertisement designs in the post condition. There was a need to eliminate these from the expert evaluation. The first author identified the activity

sheets of nine students which were found to be extremely similar or near identical, and hence not fit for a comparative evaluation from an ethics perspective. A design expert was consulted on these activity sheets, who suggested to exclude eight students from evaluation. Hence, two additional experts evaluated the activity sheets from the remaining 48 students. The experts selected which of the two activity sheets of the same student they found to be more ethical. The experts were blind to which sheets belonged to which experimental condition. The results of the expert evaluation are presented in Table 3. The table shows the frequency with which the pre and post activity sheets were rated to be as 'more ethical' by the two experts. The frequency of agreement of the two experts was 39 out of 48. The Cohen's kappa (κ) was calculated to measure inter-rater agreement and was found to be 0.625.

Table 3. Expert Ethics Evaluation of Activity Sheets

	Expert 1	Expert 2
Post Activity	32	31
Pre Activity	16	17

Table 3 suggests that according to both experts, two-thirds of the 48 students evaluated were able to create more ethical advertisements. Among the rest of the students, in some cases, there was a clear lack of evidence that the student had tried to mitigate ethical concerns. This means that the post advertisements were as aggressive as the pre advertisements. In the remaining cases, the differences were such that the experts remained ambivalent about the ethics of the two advertisements.

5 Discussion

In this paper, we observed the impact of ethics education on the design outcomes of school children. Upon introduction to the topic of ethics, we observed in the classroom that even though students had a vague sense of ethical concerns, they were not able to articulate the underlying ethical issues. By introducing ethics within a design classroom, we gave students a common vocabulary to identify and evaluate ethical issues with persuasive design. Through an analysis of activity sheets submitted by the students, we observed the changes in their design process and design outcomes. We found that students significantly reduced the use of persuasive strategies which they deemed to be unethical. As a result, the design outcomes of a significant number of students became more ethical after they were exposed to ethical considerations. These effects were not merely due to students eliminating the use of persuasive strategies altogether, but also modifying them to make them less deceptive, more transparent and less pressurizing. We observed creative alterations to persuasive strategies to account for issues of ethics. This suggested to us that

introducing ethics content in the classroom may not hamper students' design creativity, but rather ethics itself might be aided by this creativity.

6 Conclusion

In this paper, we report on the observations of a 'persuasive design ethics' session with 66 school children in Delhi. In the sessions, the children were exposed to concepts of persuasive design and designed a persuasive advertisement as part of a class activity. They were then introduced to ethical issues in persuasive design and how design could potentially deceive, manipulate or coerce a user, undermining their autonomy. To address these concerns, they normatively evaluated and redesigned their own advertisements. Author evaluations of the differences between the two sets of advertisements showed that students mitigated ethical concerns by either eliminating the use of certain persuasive strategies such as exaggeration, visibility and social proof, or by reducing their aggressiveness. We found an overall reduction in the use of persuasion within the design of advertisements after the introduction of ethical concerns. Through external expert evaluations, we also found that this reduction led to an overall improvement in the ethics of these advertisements.

This paper also has some limitations. The duration of the sessions was not enough to sensitize students to the nuances of ethical issues with persuasive design. Therefore, we only discussed manipulation and deception, which concern a user's agency, and coercion, which concerns users' freedom of choice. We did not discuss other autonomy related issues central to persuasive design. This could be one of the reasons why students did not perceive ethical issues with the 'rewards' strategy and used exorbitant discounts within their advertisements. Within our findings, we also could not observe significant differences in the use of strategies which were used less frequently, such as 'fear', 'last minute / hidden charges', 'positive framing' etc.

To the best of the authors' knowledge, this is one of the first studies to report the integration of ethics content within design education in schools. To further research in the area, similar studies need to be conducted across students of different ages and cultures to observe the impact of ethics education. Nevertheless, the findings of the study are encouraging in terms of the potential impact of ethics education on school children. We observed that even before a formal introduction to ethics, students were observant of ethical issues. However, they lacked the understanding and the vocabulary to articulate their concerns. After the sessions, when students were armed with this understanding, they were able to make systematic changes to their design to address these ethical concerns. Therefore, we believe that this paper makes a case for the introduction of ethics within design pedagogy as early as possible.

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