

Diary Study as an Educational Tool: An Experience Report from an HCI Course

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Abstract

With the rapid advancement and widespread adoption of computer technology, it has become an indispensable component in the development of human society. Therefore, computer science education's focus extends beyond merely teaching students to read and write code; it is crucial to assist them in gaining an accurate and deep understanding of the applications of technology in the real world, its conveniences, and potential risks. Furthermore, it involves exploring how to design, improve, and innovate computer technologies to meet practical demands. Consequently, Human-Computer Interaction (HCI) has grown increasingly significant in the curriculum of computer science. However, research indicates that computing students face numerous challenges in learning HCI. To enhance students' ability to experience, discover, and understand user needs, the authors of this paper recommend incorporating diary studies in HCI education. In the field of HCI, diary studies are a method for collecting long-term data on user behavior and experiences in a natural environment. Participants are required to record their daily activities, product usage, encountered issues, and personal impressions over specific periods. This paper will detail the process and steps implemented in our diary studies and present student feedback and evaluations. Through this experience report, we hope to encourage more educators to adopt and refine the diary study methodology in their courses, thereby aiding computer science students in better understanding and embracing the concepts and knowledge of HCI.

CCS Concepts

• **Social and professional topics** → **Computer science education; Student assessment.**

Keywords

Diary Study, Human-Computer Interaction, Computer Science Education

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1 Introduction

In the contemporary digital era, the rapid development of computer technology is reshaping our world at an unprecedented pace [3, 15]. The task of computer education extends beyond merely training students to read and write code. As noted by Ko et al. [23], it also involves helping students understand how technology interacts with the real world, advocating for the cultivation of a skeptical knowledge stance focused on the consequences, limitations, and unjust impacts of computing within society. The diary study is a research technique where participant interactions are logged with a product, service, or routine over a period of time, then aggregated to generate a broad view of impacts [8, 34, 37, 39]. The diary study possesses a long history and wide-ranging application areas, culminating in a recent uptick of use in technology fields. In Computer Science (CS), diary studies tend to focus on the use of technology, such as websites [18, 33], social media [32, 40], mobile device apps [27, 39], interactive games [17, 35], and wearable devices [6, 38].

Diary studies have great promise as an educational tool. By guiding students to write diaries and reflect on the diary content, diary studies address an important need in CS education—specifically, the need for CS undergraduate students to understand the impact of the technologies that they are designing, developing, and promoting [23]. The goal of applying diary studies in HCI classes is to help students reflect on multi-person user experiences over long periods of time. To highlight when diary studies can reveal valuable insights about technology use, we put forth the following examples: (1) it can be difficult to understand why it's addictive to engage in a social media platform in a single observation session, but a diary study can provide repeated exposures that can draw you in; (2) the



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privacy issues around augmented reality games that use a mobile phone’s camera in public aren’t easily revealed in a lab setting, but using your mobile phone’s camera in a coffee shop can elicit uncomfortable responses; (3) using an app for cataloging plants or birds with friends during outdoor walks in nature may only be engaging over time. Diary studies are beneficial in capturing these sorts of nuanced interactions that require extended experiences and engagement with others. Furthermore, for upper-level CS courses and particularly introductory HCI classes, computing students struggle with collecting user feedback (e.g., through interviews, observations, or surveys) and analyzing user data (using statistical software or qualitative analysis methods) to identify user needs and preferences [30]. This is understandable since the core techniques (observations and interviews of others) can be difficult to understand without sufficient scaffolding with regard to how to observe others, how to ask questions (especially follow-up questions), and how to assemble and process the qualitative results that emerge from analysis. The self-examination in creating a diary of one’s own experiences is great practice for positioning students to understand the app in a deeper way through extended use, thus enabling them to engage in informed discussions with others—and thereby gaining additional informed perspectives.

This paper summarizes our experiences with diary studies in CS introductory HCI courses to propose a detailed implementation framework. This framework comprises four phases: **Plan, Collect, Analyze, and Reflect**. We discuss the key factors to consider at each phase, along with practical suggestions. Subsequently, we present a case study involving 73 students, exploring the benefits of diary studies in HCI education through integrating feedback from student surveys. Finally, we elucidate future work to further enhance and optimize the diary study method.

2 Background

The diary study is a contextual inquiry in which participants reflect on experiences in written form over an extended period of time, ranging from a few days to weeks (or longer) [8, 34]. They are commonly applied in psychology and other social sciences [24, 28], and have been used to explore topics in CS fields like HCI and interface design [13, 34, 36, 41]. Diary studies are beneficial to capture longitudinal, qualitative data, deepening the understanding of how technological decisions or experiences evolve over time [14, 37]. Furthermore, diary studies provide insights into elusive events by capturing users’ thoughts, feelings, and motivations, guiding the design and improvement of user interfaces [10, 19, 21].

In education, diary studies have often been used as a data-gathering tool for investigating teaching and learning experiences [4, 25, 29]. Previous research has underscored the application advantages of the diary study method in higher education, particularly regarding LGBTQ identities, faith, caring responsibilities, international students, socioeconomically disadvantaged students, and employability [9]. In HCI education, existing research indicates that adopting diary studies can effectively assist students in observing and documenting the interaction processes between users and technological products in real-world settings [14]. This method enables students to directly witness the natural interactions between users and technology and reflect on how natural environments, socio-cultural

factors, and other elements influence these interactions. Meanwhile, the article also notes that educators face numerous challenges in implementing diary studies, such as selecting appropriate assessment software and determining the frequency and duration of diary entries [14]. These factors may impact the quality and outcomes of instruction. Based on these considerations, we proposed a detailed framework and set of considerations for implementing diary studies in HCI education, as shown below. This framework aims to lower the barriers for educators in applying diary studies in HCI education while simultaneously enhancing the learning outcomes obtained by students through diary studies.

3 Diary studies in education

The many variants of diary studies in research and education make adoption for research and, most relevant to this proposal, education use in computer science challenging. As a foundational step in this research effort, we crafted an aggregate model to establish a foundation for the proposal of methods and tools to support diary studies in education. Our model identifies four phases: **plan** for the diary study, **collect** diary entries, **analyze** diary content, and **reflect** on study lessons. The foundational literature in the area of diary studies includes most or all of these phases, sometimes with slightly different names; e.g., Nielsen Norman Group includes phases of plan, brief, report, interview, and analyze [37]. Educational textbooks suggest similar phases; e.g., the undergrad HCI textbook by Rogers, Sharp, and Preece describes a document-reflect-change model [31]; the grad interaction design text by Markopoulos features design-organize-engage phases [26].

Phase	Key Factors	Strategies & Recommendations
Plan	Identify learning outcomes	Identify expected learning outcomes.
	Choose the right technology	Select technologies compatible across platforms with low entry barriers. Choose technology with rich features and interactive modes. Provide multiple technologies for students to select.
	Decide duration & frequency	Adjust duration & frequency based on learning outcomes and student interests. Pick a starting time that aligns with course goals.
	Create diary prompts	Introducing quantitative rating tools. Establishing multidisciplinary guidance to foster diversified thinking.
Collect	Pick diary recording media & tool	Align with the anticipated cultivation of soft skills. Ensure data protection, accessibility and inclusivity for all students.
	Encourage, communicate, & engage students	Clarify student confusion early in diary studies. Use notifications and feedback to remind and encourage diary recordings.
Analyze	Utilize computer-assisted analysis	Use computer-assisted analysis to identify key themes and concerns. Require specific knowledge needs.
	Perform human-based evaluation	Apply human evaluation to capture individual needs and identify edge cases. Involve a longer time commitment.
Reflect	Deepen learning & user needs analysis	Decide the preferred reflection method. Prepare relevant materials and documents.
	Collect student feedback	Collect student feedback to improve diary studies details.

Figure 1: Four-phase diary study framework for CS education. For each phase, key factors and their strategies and recommendations are presented.

3.1 Plan for the diary study

Planning for the diary study represents the initial and crucial stage of the entire program. This phase sets the direction and framework for the entire learning process. The quality and richness of the diary study design directly influence the educational outcomes students achieve through this method and the depth of their understanding of user needs in HCI. During this phase, educators need to define the educational problems and the scope of expected outcomes, choose

the right testing technologies, determine the study duration and frequency, and create effective diary prompts.

3.1.1 Identify the education questions and outcome ranges. Educators must clarify the educational issues and the scope of expected learning outcomes. This requires them to thoroughly analyze the purposes, impacts, and potential results of educational activities or interventions to ensure that instructional objectives are closely aligned with educational goals. In HCI education, learning outcomes encompass multiple dimensions: mastery of relevant technological software; understanding of user research methodologies, including user interface design and user experience optimization; engagement in ethical reflection and social responsibility, exploring the ethical and social impacts of design decisions; and the enhancement of humanistic soft skills, such as empathy, critical thinking, and teamwork capabilities. Evidently, diary studies are challenging to help students fully deepen these learning outcomes within a single teaching cycle. Therefore, educators need to evaluate and decide the main focus of diary studies based on the course arrangements and the learning demands of students at different educational stages.

3.1.2 Choose the right technology. Students need to engage deeply with selected technology over an extended period to thoroughly understand user needs and pain points, making the selection of an appropriate technological platform critical for conducting diary studies. The chosen technology should offer good platform compatibility and low entry barriers while providing accessibility, ensuring that most students can participate. Secondly, the technology should possess a rich set of features and interactive modes to ensure that students have ample opportunity for in-depth observation, recording, and reflection over prolonged use rather than merely performing repetitive, meaningless tasks. If technology has not been updated for an extended period, educators should verify whether its functionality and user interface still operate as intended and meet the expected learning objectives to avoid outdated student experiences. Lastly, educators can select and provide multiple test subjects for students to choose from or to be grouped into. Educators might consider selecting popular technology categories among student groups, such as video games and social media. By integrating current hot topics, educators can enhance students' learning interest and engagement, as these popular applications often incorporate cutting-edge technology, helping students better understand the contemporary technological environment, delve deeply into actual user interaction patterns, and comprehend how computer technology affects human behavior and cognition.

3.1.3 Decide duration and frequency. Diary study duration refers to the overall time span during which participants continuously record their observations, experiences, or activities, while diary study frequency indicates how often these recordings are made throughout the study period. We experienced two distinct configurations of diary study durations and writing frequencies. One approach spanned eight weeks with diaries written once weekly (low-frequency, long-duration), while the other lasted three weeks with three diary entries per week (high-frequency, short-duration). Although the total workload of both approaches was roughly equivalent, we observed a notable reduction in instances of omitted or delayed diary submissions under the latter configuration. Students

demonstrated more tremendous enthusiasm and engagement in the high-frequency, short-duration diary reflection sessions, as their memories were fresher. Careful consideration should be also given when assigning a diary study. Early-semester diary studies can serve as a source of inspiration for students and create a foundation for semester projects. Late-semester diary studies enable students to integrate previously acquired knowledge and activities for a comprehensive reflection on the course.

3.1.4 Create diary study prompts. Educators should provide diary study prompts to assist students in gaining a deeper understanding of users' experiences and needs. These prompts are intended to guide students in documenting and reflecting on the authentic emotional reactions, behavioral patterns, and challenges they encounter. This approach works best when students match the target user population (i.e., similar in age, gender, and education level). The diary prompts should be specific and direct, clearly instructing students on which particular user behaviors and reactions to observe and record. Introducing quantitative rating tools can standardize and streamline the data collection process. This alleviates the burden on students to document details and enhances the data's comparability and analyzability, allowing students to more clearly identify patterns and trends within their own experiences and providing robust data support for subsequent product design. To give students a more comprehensive insight into the user experience, the prompts could also include guidance on analyzing issues from multiple perspectives, such as cultural, social, and economic viewpoints. This multidimensional observation aids students in building a more holistic user model.

3.2 Collect diary entries

Upon completion of the aforementioned preparatory steps, students need to interact with specified technology according to explicit criteria and complete related diary entries. During this process, educators can alleviate the pressure students may experience while documenting their diaries by selecting appropriate recording media and tools, and by providing necessary notifications and encouragement, thereby enhancing the overall quality of the diary studies.

3.2.1 Choose the diary recording media and tool. Technological advancements have significantly diversified the media for collecting diary data. Moving beyond traditional paper diaries, there are now highly interactive and shareable online electronic diaries and smartphone apps, which greatly facilitate the convenience of diary recording. Diary formats have expanded from just written entries to audio or video recordings and electronic records created through specialized software [10]. This variety in media and formats allows for collecting both retrospective and momentary data, suiting various educational needs and preferences. Additionally, accessibility and inclusivity must be considered to ensure no student is excluded due to technological barriers, and for those with specific needs, features like text-to-speech or speech-to-text functionalities are beneficial. Privacy and data security are also paramount, especially with electronic diaries, requiring compliance with data protection laws and educating students about online privacy risks.

3.2.2 Encourage, communicate, and engage. Maintaining high student engagement is crucial for ensuring the quality of learning

outcomes. Educators should employ specific strategies to enhance student participation in diary study. Initially, educators should actively interact with students during the early stages of diary study to deeply understand their thoughts and potential uncertainties about this learning approach. This timely communication allows teachers to adjust their teaching plans, ensuring students are clear about the objectives and expected outcomes of the diary. Furthermore, educators can use emails, learning management systems, or mobile applications to regularly remind students to record their diaries, thereby preventing neglect of this task due to the busyness of daily life. Positive feedback and constructive suggestions help students recognize their learning progress and motivate them to continue engaging and improving their learning methods. Therefore, we can enhance students' sense of involvement and responsibility, improving the quality and depth of diary entries.

3.3 Analyze diary content

The analysis phase assists educators in gaining a profound understanding of students' perspectives and thoughts. In educational practice, the analysis of student diaries can employ a hybrid method combining human-based evaluation (e.g., Human coding [16]) and computer-assisted analysis (e.g., Topic Modeling [5]) to accommodate classrooms of varying sizes and to mine the richness of diary content deeply. This mixed-method approach integrates the meticulous observation of human coding with computer-assisted technologies' large-scale data processing capabilities, enabling educators to understand students' learning experiences and feedback from multiple dimensions.

3.3.1 Utilize computer-assisted analysis. Computer-assisted data analysis involves using software tools and algorithms to process and interpret data, enhancing the efficiency and accuracy of research or decision-making [12]. Applying this technology, such as topic modeling techniques, can effectively manage and analyze a large volume of diary data. Through automated data analysis, educators can quickly identify the main themes and common concerns within student diaries, thus gaining a macroscopic understanding of the overall student body's learning state. This not only enhances the efficiency of data processing but also makes teaching feedback more scientific and systematic, helping teachers optimize educational strategies and improve teaching quality on a broader scale.

3.3.2 Perform human-based evaluation. Human-based evaluation, such as human coding, involves assessing academic work, teaching effectiveness, and student outcomes through direct review and judgment by faculty, peer reviewers, or accreditation bodies. It is particularly suited to smaller-scale classes where instructors can focus on each student's specific expressions, especially those marginal but insightful cases. Although these cases may be few in number, they often reveal key issues or success factors in the teaching process, providing customized directions for pedagogical improvement. Additionally, human coding allows teachers to more precisely and comprehensively capture students' individualized needs and responses, thereby more effectively adjusting teaching strategies and course content.

3.4 Reflect on study lessons

The final phase of the diary study methodology involves guiding students through reflection based on the results of data analysis, utilizing pedagogical methods aligned with educational objectives such as focus group discussions and class discussions. Furthermore, educators could collect student feedback through surveys or questionnaires to improve future diary study setups.

3.4.1 Deepen learning and user needs analysis. Diary studies is more than merely a data collection tool. Educators need to guide students in discussing and summarizing the viewpoints encountered during the diary study. Educators should first select an appropriate reflective method based on the reports from the analysis phase while also considering factors such as class size and personal teaching philosophy preferences. For instance, focus group discussions can facilitate the exchange and collision of ideas among group members, whereas brainstorming sessions can help students apply discoveries from the diary study to new product design. Once the reflective method is determined, teachers should prepare relevant instructional materials, such as writing templates and Miro boards, to stimulate active participation in reflective discussions and ensure that a diverse range of voices can be fully heard and shared.

3.4.2 Collect student feedback. Collecting student feedback is a crucial step in optimizing future diary study settings. Educators can gather students' opinions and suggestions through surveys or questionnaires. This method helps educators understand students' perceptions of the current diary study activities and provides specific feedback on how to improve teaching methods and course content. Educators should adjust the implementation details of diary studies based on student feedback to better meet students' learning needs and expectations.

4 Case Study

This chapter presents a case study based on the diary study framework above for reference. During the Spring 2024 semester, we applied this framework in an introductory HCI course involving 86 undergraduate students. The purpose of this course was to equip students with a fundamental understanding of computer HCI concepts, enabling them to develop technologies that could supplement or replace existing solutions or meet unfulfilled technological needs through an understanding of user requirements and experiences.

Each subsection corresponds to a phase in our model, with key factors from Figure 1 bolded. We discuss our rationale in choosing strategies and recommendations best suited for this class.

4.1 Plan for the diary study

We first **identified the education questions and outcome ranges**. We aim to encourage students to explore and analyze real-world user interaction patterns and needs. Through first-hand experiences gained from the diary study, assisting students to deep dive into user usage habits, pain points, and human factors (e.g., motivation, emotion, social influence), thereby enhancing the understanding of user needs and experiences. **Choosing the right technology** is important for diary studies. To cater to the diverse interests and hobbies of the students, four different types of software (Pokémon

GO, Marco Polo, DailyBean, and Instar Affirmation Writer) were made available for selection.

For the **duration and frequency of the diary study**, we decided to adopt high-frequency, short-duration sessions. Students were required to complete a minimum of 3 diary entries per week, each involving at least 15 minutes of interaction with testing software, lasting 3 weeks. This arrangement ensures that students have ample time to thoroughly experience the selected software, while also preventing overexertion, thus allowing them to manage the learning demands of other courses. The diary study task commenced in the third week of the semester (total 15 weeks). Through the initial three weeks of coursework, we assisted students in establishing a fundamental understanding of HCI. By employing the diary study methodology, we further deepened their comprehension of this field and prepared them for subsequent project topics.

We **created diary prompts** tailored to each software application, aiming to complement the unique characteristics of each application. These prompts include questions regarding time, location, mode of interaction, user experience, and questions utilizing software features. Additionally, we have incorporated specialized questions targeting different software applications' distinct features. For instance, in Pokémon Go, we required students to use the Inclusion of Other in the Self (IOS) scale [2] to document and analyze the process of bond formation between users and their virtual pets.

4.2 Collect diary entries

We **picked electronic text recording** for students to complete their diary study tasks. This approach cultivates students' abilities to describe user experiences and generalize user needs. Such training assists them in designing more user-centric interaction products and features and effectively identifies and resolves user issues. Additionally, we aim to enhance students' writing skills through this method, which improves their expressive capabilities and fosters their logical thinking and critical reasoning skills, enabling them to convey complex user experiences and needs more accurately. Therefore, we selected Google Docs as the tool for recording learning diaries to support achieving these educational objectives. The widespread accessibility and ease of use of Google Docs ensure that all students, regardless of their technological proficiency, can participate in the learning process without barriers.

To **encourage, communicate, and engage students**, we initially set up a 15-minute workshop on the first day of the diary study during the class session. In this workshop, we provided a detailed introduction to the concept and specific steps of the diary study, explained the functionality of the test software and the corresponding diary prompts, and confirmed the frequency and period of diary entries. Additionally, we addressed any uncertainties the students had, ensuring they were fully informed and prepared for the impending learning process. Over the three-week diary recording period, we encouraged students to complete their diary entries through Canvas announcements and reminders during class. This ongoing communication helped maintain the students' motivation and enhanced their understanding of and engagement with the course objectives. Through such methods, we aimed to create a supportive and motivating learning environment, enabling students to actively participate and gain practical experience and skills.

After the three-week recording period, 5 students failed to submit their diary study reports as scheduled, and 4 did not complete the specified number of diary entries. However, the remaining students (N=73) completed their diary reports as required.

4.3 Analyze diary content

By integrating computer-assisted analyses and human-based evaluations, we conducted an in-depth examination of diary data to comprehend student learning experiences. Considering the large class size, we initially **utilized computer-assisted analytical techniques**, choosing Latent Dirichlet Allocation (LDA) [22], an advanced topic modeling approach, to classify and summarize common topics within various test software. LDA enabled us to identify frequently occurring themes in the diaries, providing an overview of the content and experiences commonly shared among students.

Building on this, we **performed human-based evaluations** to delve into these diary entries. Through rapid reading and annotation, we identified events that, while infrequent, merited attention, such as unique user experiences, special events, and unconventional interaction scenarios. These manual annotations helped us capture details that computer analysis might have missed, thus rendering our analytical results more comprehensive and specific.

This hybrid approach of combining computer and manual evaluations enabled us to gain a more complete understanding of the details and deeper reflections expressed by students in their diaries. Through computer-assisted analysis, we could efficiently process large volumes of data and swiftly identify main themes; meanwhile, human-based evaluations allowed us to deeply explore unique and critical events within the diaries, yielding richer and more layered insights. This integrated method of analysis enhanced the efficiency of data processing and augmented our understanding of students' learning experiences, providing a crucial foundation for improving teaching methods and enhancing student learning outcomes.

4.4 Reflect on study lessons

To **deepen students' reflection** on the content of their diaries, we employed a pedagogical approach involving focus group discussions [20]. We developed discussion topics and writing templates for focus group discussions based on the results from computer-assisted analyses and human-based evaluations. After obtaining students' consent, we extracted diary entries related to the discussion topics. We presented them in the corresponding writing templates to minimize recall errors and facilitate group discussion. According to the distribution by the testing software, students were randomly assigned to groups of 5 to 10 members, each led by a graduate student experienced in the HCI domain. Following the "write-first, discuss-later" model [1], students shared their experiences and viewpoints, deepening their understanding and reflection on the findings from diary studies and related topics. Through discussions and idea exchange, students gather insights and viewpoints from diverse backgrounds, applying them effectively in Problem-Based Learning settings. Project requirements can ask students to utilize diary study findings to define and solve problems creatively, e.g., if a diary study revealed a lack of knowledge about a competitor's progress, a redesign should explicitly make that information more

obvious. This method enhances self-directed learning, shifting them from passively receiving to actively solving problems.

To better **understand students' perceptions** of the diary study method and to facilitate the iterative improvement and optimization of this learning approach, we have decided to employ an anonymous survey. The survey specifically focused on eliciting student feedback on three aspects: (1) overall satisfaction with the diary study; (2) the helpfulness of the diary study in enhancing understanding HCI concepts and knowledge; (3) whether participation in discussions and reflections within the diary facilitated new insights regarding user needs and user experience. A 5-point Likert scale was utilized to evaluate the first and third aspects (1=Very dissatisfied/Not at all helpful, 5=Very satisfied/Extremely helpful), while the second aspect was addressed using a binary yes/no format. Furthermore, we encourage students to provide detailed comments about their experiences and thoughts on the diary study.

5 Evaluating satisfaction

To assess student satisfaction with diary studies, we surveyed 73 students who submitted diary reports and attended the reflection sessions (11 sophomores, 36 juniors, 26 seniors, with average age 20.77 years (SD=1.18). Majors included computer science (63), Engineering (5), Architecture, Arts, and Design (4), and Business Information Technology (1). We queried them on overall satisfaction with diary studies and knowledge gained from diary studies, both on a 1-5 Likert scale and via free-form responses.

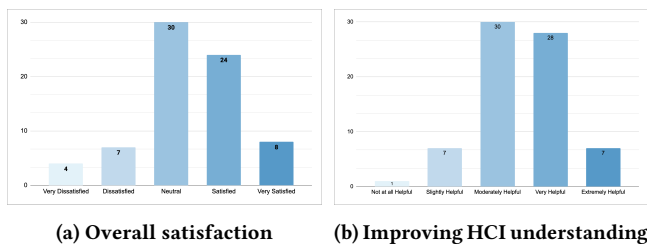


Figure 2: Student survey feedback on a 5-point scale

5.1 Overall Satisfaction

Students' interest substantially influences educational outcomes [7]. The survey shows that students exhibited moderate to high satisfaction with the diary study tasks. Specifically, 85% of students were neutral or better regarding satisfaction (see Figure 2a). Comments showed appreciation for in-depth exposure to a "real-life application", with ways to "improve the user experience". These results suggest that diary studies, as an educational tool, could enhance student interest and engagement (or at least not detract from it) as the methodology is acceptable to most students.

However, we note that the plurality of students were neutral about diary studies, and 16.1% expressed dissatisfaction. Through analyzing student feedback, we identified several sources of dissatisfaction: some software did not meet student expectations (e.g., bugs, platform incompatibilities), prolonged interaction led to fatigue, and some students preferred programming tasks. These findings support the views we presented in sections 3.1.2 and 3.2.1, namely,

the importance of selecting appropriate testing software and diary recording media and tools when implementing diary studies. By optimizing these aspects and connecting diary study results to future development efforts, we expect to enhance the overall effectiveness of the teaching method by increasing student satisfaction.

5.2 HCI Understanding

For students new to HCI, mastering the complex concepts associated with this area is often a challenge [11]. The survey shows 89% of students believe that diary studies have at least moderate use in advancing understanding and comprehension of HCI principles (see Figure 2b). Students elaborated "noted different features, strengths, and weaknesses" that might not have been evident otherwise, and diary studies helped realize how the app "could be updated to improve the user experience". It is encouraging that diary studies foster students' active learning and critical thinking in authentic environments by emphasizing students' agency, allowing them to engage not only as technology users but also as evaluators and designers. By documenting daily experiences with technology, students can more clearly identify the strengths and weaknesses in technological designs and propose improvements.

Individuals vary in their understanding and emphasis on user experience and needs. It is crucial for students to acquire a fresh perspective on user experience through diary studies, which plays a significant role in comprehensively mastering user needs. According to survey feedback, 58 students (79.45%) reported gaining valuable new insights during their diary studies, with students noting "so many things others said about their experiences that I didn't even think of" and that "others also made suggestions for improvements ... that I would never have considered". By exchanging and sharing personal experiences and insights, students are able to hear different viewpoints and acquire broader perspectives, fostering complementary knowledge gleaned from distinctly different experiences and needs, even with the same product or service.

6 Conclusion and Future Work

The authors of this paper propose integrating diary study methods into CS HCI education to reduce the barriers students face when learning about HCI and deepen their understanding of HCI concepts. To assist more CS educators in adopting diary study methods, we have compiled this experience report based on past lessons learned. The report details a four-phase diary study framework—**Plan, Collect, Analyze, Reflect**—elaborating on the key steps and critical factors to consider at each stage. Analyzing a case study based on this framework, we believe diary studies have broad application prospects. Students are optimistic about this approach and are able to deepen their understanding of HCI knowledge through it. To further validate, refine, and support the efficacy and applicability of this pedagogical method, our future work includes (1) developing and implementing tools to streamline challenging aspects of using diary studies in courses; (2) seeking educational colleagues who share similar philosophies, and extend the application of diary study methods to broader domains within CS education, such as capstone courses and algorithm learning; (3) investigating the impact on student learning outcomes through more detailed categorization, such as empathy building, diversity awareness, and self-confidence.

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