

Wearable Futures Hackathon – Co-creating a Hybrid, Interdisciplinary Learning Experience

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- Collaboration
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- Participation
- Engagement

Abstract

This paper is a personal reflection and autoethnographic account of the primary author's experience revolving around the participation in the Wearable Futures Hackathon course as a co-creator for the University of the Philippines Open University (UPOU) Bachelor of Arts in Multimedia Studies program (BAMS). It documents how his perceived participation evolved from being a consultant into co-creator of one of the Multimedia Studies course, the challenges he had to face reconciling the difference between the two, and how co-creation can possibly benefit the academe, the faculty, and the students as participants and as co-creators in developing engaging, innovative, and participatory workshops and classes, not only through online but also offline, first-person perspectives will be employed hereafter.

Introduction

The goal of co-creation is to involve the end user from the start to finish of the development process, with the aim of producing a relevant and useful product. In terms of education, it is implemented to innovate and improve current practices involving the end-user which is the students in the process.

Co-creation has not been something foreign to me as it is a part of the industry I have been with (creative and marketing) for more than a decade now. Where we take customers, consumers, or end-users in a focus group and get their buy-ins on certain projects or strategies we are developing, allowing them to be part of the creation process and development with the hopes of creating a product that is generally accepted and received well by the market. But co-creation in the field of education was something unfamiliar to me because it was generally thought of as in the realm of the academe and scholarly and students are merely consumers and passive participants in the process being collaborators (Bovill et al., 2015) at the most, with feedback forms at the end of the course as the only means of co-creation in the form of generic feedback which we didn't really think made a difference.

Approached by one of this paper's co-authors, University of the Philippines Open University (UPOU) faculty Diego Maranan, for an opportunity to co-create a special course to be offered at the UPOU, I jumped at the opportunity as I was looking for a special project to take on as part of my requirement to graduate. The Wearable Futures Hackathon (WFH) course was a 12-week long, hybrid learning experience that explores wearable technology, e-textiles, speculative design, and futures thinking (Maranan, 2022). The course started on 2022 October 10 and is currently ongoing. Fairly confident that I could be of help as I was familiar with the creative co-creation process and deep interest in education. I assumed myself as a collaborator in the process giving insights as a student and helping with logistics at the most. During the process of conceptualization, I was given more liberty to curate reading and viewing materials, participate in the selection of the participants for the hackathon, and even be included in the formation of the schedule of activities. My participation evolved from being a collaborator to an actual co-creator of the course.

Research Questions

The following questions arose and were answered empirically during my involvement in the course creation.

1. What are the challenges in co-creating a course from the perspective of a student participating in the co-creation process?
2. How can participant involvement in the co-creation of course content improve learning outcomes?
3. How can co-creation aid in increasing engagement, satisfaction, and learning outcomes from the participant co-creating a course?

This research revolves around the changes in my own behavior towards co-creation and observation of the participants of the WFH course which is currently ongoing.

Review of related research

Bovill et al. (2015) identified four roles that students take during the co-creation process; this model was based on their own experiences as well as other models of co-creation in higher education literature.

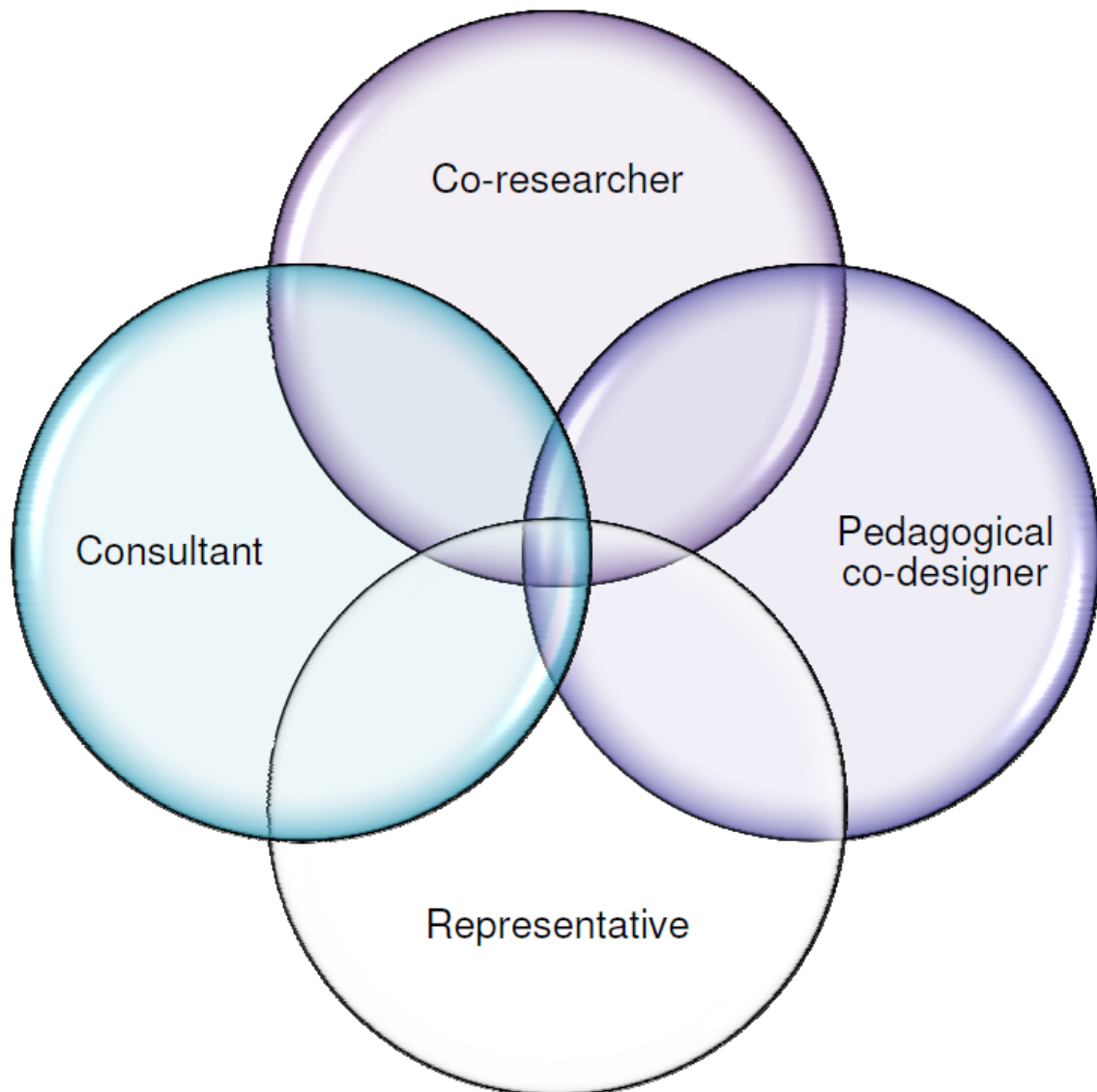


Figure 1. Diagram of student roles from Bovill et al (2015)

The consultant, co-researcher, and co-designer roles are mainly adviser or staff driven and the representative role is mainly participant or student-driven. Among the four roles, the representative role is the most commonly taken in by the students, the co-creation participation in this case is likened to a consumer role providing feedback on services they have received, most commonly taking the form of student feedback that takes place after the course. The top three roles are active participation roles where the students partake in the co-creation process along with the faculty and staff of the institution, it is also the area where most of the challenges are observed and often require re-thinking of the assumptions of power, autonomy, teaching, and responsibility.

As a student of Bachelor of Arts of Multimedia Studies and lead developer of the curriculum and primary author of this research, Chang's 2008 *Autoethnography as Method* provides coherence for qualitative research that incorporates a degree of self-reflexivity and engagement with the participants, one gets to observe the subtleties of group dynamics, and the serendipitous quality of the class interaction during brainstorming sessions and consultations. As Chang (2008) states, narrativizing does not guarantee an immediate result, but with an in-depth and methodical approach and analysis. By using autoethnography, I would be able to provide insight as a student and course developer and at the same time extract data from the participants, which will provide more in-depth instructional data for teachers, and educators.

Stagg's (2014) model of continuum practice theoretically frames the process of engagement in developing courses by encouraging the student in designing courses to acknowledge their experience, from being a passive listener into an active participant of the course, examining their level of enthusiasm and participation throughout the course. This framework is not only limited to the primary author's experience but also to the participants of the course, who now have access to the resources and also as potential collaborators for another course subject.

Levels of student (pupil) involvement in school self review & school improvement

Students as DATA SOURCE	Students as ACTIVE RESPONDENTS	Students as CO- RESEARCHERS	Students as RESEARCHERS
(a) rationale & engagement			
Rationale Teachers need to know about students' prior learning / perceptions of their learning in order to teach effectively	Rationale Teachers need to engage students in order to fully enhance both teaching and learning	Rationale Teachers need to engage students as partners in learning in order to deepen understanding and learning	Rationale Students need to engage with their teachers and peers in order to deepen understanding and learning
What Kind of Knowledge is Used Knowing about student performance and attitudes towards learning	What Kind of Knowledge is Used Knowing how students learn	What Kind of Knowledge is Used Knowing what students might be able to contribute to deepen understanding	What Kind of Knowledge is Used Knowing what teachers and peers might be able to contribute to deepen understanding
How Teachers Engage with Students Acknowledging	How Teachers Engage with Students Hearing	How Teachers Engage with Students Listening in order to learn	How Teachers Engage with Students Listening in order to contribute
Student Role Recipients	Student Role Discussants	Student Role Co-Researchers	Student Role Initiators
How Meaning is Made Dissemination	How Meaning is Made Discussion	How Meaning is Made Dialogue (teacher led)	How Meaning is Made Dialogue (student led)

Figure 2: Michael Fielding;s 4 levels of involvement

In Fielding et al's (2001) project done within a secondary school, they identified 4 levels of involvement of students which are: 1) data source; 2) active respondents; 3) co-researchers, and 4) researchers. Based on their observations the higher the level of involvement the higher the learning and satisfaction of the student. The approach Fielding and his team took was active participation as co-creation and collaboration where the initiatives came from the students and eventually, they moved from each level reaching students as researchers. This table was referenced by Allin (2014) in the reflective essay regarding the notion of collaboration and co-creation in a project for SOTL (Scholarship of Teaching and Learning) designed to explore staff and student involvement and whether true collaboration can be achieved. Challenges were

stated during the paper challenging how much autonomy and decision-making the students have over the research versus the hovering and guidance of the advisor in the process.

Intal (2021) discusses how co-creation is currently applied in the Philippines as a process of integrating technology in different teaching modalities, possibilities gained from collaborations of different stakeholders, and the applicability of the co-designing process for education. The paper focuses mainly on how students and teachers can co-design the use of technology in education and the production of open educational resources (OERs). This strategy and ideology are the same as the observations of Librero (2019) stated in his autoethnographic paper discussing his personal experience engaging students to co-create OERs for the use of the UPOU through the Digital Collective initiative. This is the usual approach taken by educators and the academe for collaboration and co-creation, which is not surprising as this is the same as how it is done in the design industry, with end-users as data sets and valuable sources of information.

Otieno's (2011) paper on makerspaces validates our decision to use Bukas Lab to create a physical environment that is conducive for collaboration, cross-disciplinary learning, social dreaming and making. Academic makerspaces already exist in other universities both in and out of the country, Macaraeg et.al. (2021) outlines the need for such spaces in the institutions: access for students in ideation, prototyping, and mentorship; To provide a research facility, promote 21st century learning skills like critical thinking, communication and creativity which is vital for academic institutions, and industry linkages. Makerspaces' investigatory and problem-based teaching environment not only gives the students the opportunity to explore and get hands-on with materials but also imparts a sense of agency with their learning.

Methods

As a student of the course and course developer, this research paper will be presented in an autoethnographic format, by combining personal insight and observation with ethnographic process and analysis would allow me to collate my experiences in hindsight. Similar to autobiographical content, parts of the paper will highlight some of the author's realizations that affected the course development. In reference to Reiser and Dempsey (2012), learning is multifaceted but a delineation must be established from its "maturation and development", "adaptability" and "learning as a guided process and as a cultural process" Applying this method allows the author to track his own learning process and the overlapping, and non-sequential character of the research work as data is continuously modified and refined analysis during the process of its collection.

I will be drawing my conclusions through the reflection of my progress from a collaborator to a co-creator of the WFH course, using the observations stated by Fielding (2001) and Alin (2014) from their own research as the basis of comparison on how it was approached by my adviser to facilitate this growth. A qualitative approach will be used as well at the end of the hackathon which is currently ongoing to achieve a better understanding of how the participants perceived the course and how they felt knowing another student helped create the course and the possibility of them doing the same thing in the future.

For the case study, the WFH course is a unique offering for the program as it touches on a topic that is not offered, physical computing. Interaction design is the basis of physical computing, where the learners are tasked to create art pieces, pieces of technology, or technology-based solutions that interact with their environment or provide a solution to a dilemma. The WFH course was offered to the University of the Philippines Open University (UPOU) Bachelor of Arts in Multimedia Studies (BAMS) with the initial sample size of 25 students ranging from junior to senior students at different age levels and no previous physical computing background. We advised the students beforehand that the course would offer both synchronous and asynchronous sessions as well as face-to-face sessions that would be held at Bukas Lab in the Department of Information and Communication Technology building at UP Diliman. The bukass lab is a maker/hackerspace-inspired location with the equipment and resources needed to facilitate the creation of the prototypes and the final project of the participants.

Bukas was chosen as it is equipped to handle a group of students with enough safeguards to ensure that Covid protocols are still followed and maintained. For the computing aspect of the hackathon, the participants were asked to acquire a micro:bit computer which will serve as the main processing and interface unit for their wearables. It has built-in input and output devices and can be coded either through code blocks or directly using python giving it a shorter learning curve versus other microcomputers available in the market. We have also employed the help of a wearable technology expert Ann Peters that led the micro:bit workshop as well as a speculative design workshop. We have also focused on the word "Creative" for the hackathon, it is understood that physical computing is inherently creative but with a focus on the here and now versus the hackathon focusing on the Future and possible scenarios that the students can create using their creativity. which was spearheaded by the Meta-Futurism team of Mona Nasser and Pieter Steyaert.

Results

Student as a collaborator, user as data

I initially approached the hackathon with the mindset of a collaborator, where I would not be making key decisions and providing feedback as a student/end-user. This mindset was enforced by my understanding of what co-creation is in terms of the creative industry, which is what I am accustomed to, where users' perspectives and feedback are valuable data that we can use to create or improve a product. Final decisions were made by the stakeholders of the institution or companies and feedback was merely suggestions. With this as my perspective, I was taking a passive approach to the co-creation process waiting for my adviser to discuss the idea and giving my buy-in or suggestions from those ideas. But this is where the difference in meaning came in as I was asked what, why, and how questions which were unusual as I was given autonomy to conceptualize how it would look like and what the topic would be. This can be likened to the student initiative Fielding (2001), where the students would take initiative and conduct research to propose changes in the school or curriculum and present them to the faculty for approval.

Student as an active respondent

I wanted the hackathon to be unique not just because I co-created it but also taking into consideration my personal quips that the program did not have many offerings that allowed the student to be more creative and explore new things. I was fortunate enough that my adviser has a wealth of experience in physical computing and leading workshops for creative thinking. I suggested we use those experiences as a unique proposition for the course we are building and would surely gather the interest of the students to participate. This is where my participation from collaborator moved to the active respondent phase, in which I took the initiative to propose iterations and changes to the hackathon rather than waiting to be given direction. The level of responsibility was raised because of this realization of active participation, I understood that my proposals and suggestions have a direct and real effect on the outcome of the hackathon.

Over the course of a year, we have planned and made the necessary iterations to the course outline, requirements, health considerations, and mentors for the hackathon. I was given the unique opportunity to see what goes behind creating and facilitating a course and developed a deeper understanding of the intricacies of what goes behind the courses we take at the university. The amount of preparation, considerations, adaptation, and contingencies needed is not something considered when you are on the consuming (student) side. We wanted to give a lot of materials for the participants to consume but took into consideration the capacity of the participants to understand and comprehend the materials given that there is not offered during the regular term of the program, new media was discussed but the actual making of new media and physical computing devices was not touched and was mostly thought of as a physical activity due to the skill transfer needed on top of the theoretical.

During the process of building the course itself, I had some doubts and perceived challenges over how the faculty and staff would receive the proposals I made and presented. I was surprised with the reception I received from them as it was positive and very reassuring, this was felt by all the faculty and staff that I interacted with. This is different from the perceived challenges (Bovill; et al, 2015; Fielding, 2001) co-creation can face when implemented. These concerns and challenges are real as power relations are tricky to navigate especially when giving autonomy and decision-making to students (Bovill; et al, 2015), as specialty and responsibility are usually associated with educators, faculty, and staff. Personally, I was more concerned about what I can do to bring value and what the responsibility entails than misusing the autonomy and responsibility given to me.

Student as co-creator

The co-creator level was reached the closer we were to the implementation of the hackathon, where I was included in the creation of the form, the data that was included in the form, discussions with mentors, further development of the weekly tasks, and the selection process of the participants. The more I was included in the process, the more I achieved the co-creator mindset further pulling me away from just being a collaborator or an active onlooker providing insight, my voice was heard, and decisions were taken into consideration. The more I felt autonomous and responsible for decision making the more I felt the need to make the course

work and succeed and the more I was invested in it. Looking back, if I had left out the different processes in conceptualizing and creating the hackathon, it wouldn't have made a difference in my outlook because the less the investment the less drive and motivation I had for the success of the project.

Student as co-researcher

The hackathon has already started to be implemented as of October 2022. Feedback from the students knowing that the course was co-created by a fellow student was overwhelmingly positive, though mostly through undocumented conversations, with the theme of "I can't possibly do that" prevailing in the discussions at the start turning to "this is so cool, I want to do it too!". These interactions with the participants provide me with the drive to ask myself "If I was able to do this, would it be possible for them to do it too?". This inquiry is moving me toward the level of co-creator to student researcher. The consideration of getting qualitative data after the hackathon to identify what would make students want to undergo the same co-creation process and how can my realizations and experience be used to further co-creation is something I am deeply considering.

Discussion

The adaptation of co-creation in the academe provides a different perspective on how a course is taught, facilitated, and prepared. Much like how products and services are innovated, improved, and developed with the participation of end-users/consumers, education, in general, can greatly benefit from distance learning or otherwise. There are concerns identified during and throughout the implementation of co-creation and the concerns have been identified through research, but then I would argue that the benefits of offering co-creation as a valid option for faculty and students alike would outweigh the perceived drawbacks. The changing of the mindset from collaborator to co-creator is the main challenge from my experience as this is reliant on both participants (student and faculty) in the co-creation process, the willingness of the facilitator to give autonomy and responsibility to the student, and the openness of the student to accept the responsibility and make full use of the autonomy to create effective change. My adviser opted to always ask my opinions and line of reasoning for the decisions I would take, this empowered me to make conscious and educated decisions and gave me an avenue to exercise both autonomy and responsibility in the decision-making process. This is the main factor, in my perspective, that allowed me to grow from collaborator to co-creator, increasing my stake in the project beyond a grade but more my interest in making the project work as well as for others who would participate in the next iterations.

The concerns about power distribution and responsibility sharing (Bovill; et al, 2015; Fielding, 2001) are an actual concern when taking part in the co-creation process. The deeply rooted idea that these are held by the faculty and staff is not just real but also deeply rooted in the students who are participating in the co-creation process. But basing it on my experience in co-creating the WFH course, these can be overcome by setting proper expectations, limitations, and responsibility sharing. When the student understands what is expected from them at the onset, clear goals have been set, and the understanding that they are responsible for outcomes

based on the decisions most if not all are addressed. The drive to provide positive change and make a mark would be enough for the student to engage in the co-creation process, but the valuable insights, perspective, and realizations would be the real prize when you participate in it.

Conclusion

Further research is needed to fully understand the viability of co-creation in the institution with different participants, both student and facilitator, courses, and projects to adapt co-creation perspectives. I had a background in teaching and decision-making due to my experience in the creative industry, where a participant with little to no experience may have a different perspective on the process. The participants of the WFH course knowing the possibility of co-creation would be a great start for further iterations of the project.

Based on my experience in co-creating the WFH course, I have developed a deeper sense of satisfaction with my program and an interest in further creating changes to make the program more innovative and adaptable through my active participation. Co-creation is a great opportunity for any student to experience as part of the growth and development that they can bring to industries outside the academe after they have graduated and left the university. Steps clearly need to be taken for co-creation to work and expectations need to be set for both parties in the co-creation process in the next iterations of the research and its implementation.

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