Peer-Produced Archives, Peer-Designed Solutions

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Abstract. Shadow Libraries are digital media repositories whose primary goal is to disseminate content inaccessible to users otherwise. As a case study we will delve into Portuguese-Student Shadow Libraries which focus on disseminating study materials and producing new resources that serve as primary aid for peers to study and to be prepared for tests, exams and overall assessment moments. This study aims to contribute to designing and developing a framework to preserve and distribute the sensitive collections assembled by/for informal communities where access is enabled by demanded peer production. We intend to work closely with our target audience to achieve this goal, involving community members across various design processes and decision-making moments. We actively question what characteristics make Portuguese-Student Shadow Library relevant to their public and what speculative features present users envision. This paper summarises the findings from a thematic analysis of semi-structured interviews. We sought to present a representative overview of participants' perspectives, demonstrating that unique disciplines, students, and contexts have different requirements. Presented results collect theoretical approaches to improve Portuguese-Student Shadow Libraries, making them more valuable to their users and reimagining innovative processes to publish and access disseminated study resources. Integrating diverse community members from the preliminary design stage resulted in meaningful contributions and provided knowledgeable insights that will inform the design of our framework.

Keywords: Peer-Produced Archives · Academic Communities · Community Design · Knowledge Production · Media Design

1 Introduction

Shadow Libraries are digital media repositories whose primary goal is to disseminate content that would otherwise be inaccessible to users. They are a transient response to limited access to published knowledge, defying high prices, paywall limitations imposed by academic publishing companies, location-based restrictions, scarcity of informal publishing spaces, and others.

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Dissemination of resources across Shadow Libraries does not fit conventional publishing standards. Shadow Libraries rely on informal communities to produce new resources, convert physical documents into digital files, and design, implement, and host archives that allow audiences dependent on digital and physical spaces to access them.

Shadow Library collections hold specific conditions and demand distinct ways to interface with their audiences. As a case study, we will focus on Portuguese-Student Shadow Libraries (PSSL). PSSL exist in various environments, from student-led drives to independently run print shops. PSSL gather unofficial vital communities of knowledge production and dissemination. These ecosystems integrate multiple people within the academy, drawing together students, professors and other independent workers. These spaces disseminate study resources among university students, which serve as primary aid for peers to study and to be prepared for tests, exams and overall assessment moments. These initiatives share content adapted to individual curricular needs across several students and disciplines, and rely upon the academic community to produce updated resources, thereby ensuring their relevance to users. PSSL's main characteristic is that peers create these libraries to satisfy peers' needs.

We identified it as critical to introduce a collective design methodology that gathers needs and feedback and closely works with our target audience. Our research aims to design and develop a framework to preserve and distribute the sensitive collections assembled by/for informal communities where access is enabled by demanded peer production.

The present qualitative analysis seeks to comprehend the contributions of the academic community, including professors, students, and others, in such streams of knowledge dissemination and production. Each interview session aimed to understand better the usage of informal archives created to sustain participants' academic progress.

It is vital to clarify the broader perspective on comprehending the term *production*. The production of resources, such as *sebentas*—notebooks that compile exams and test questions—and the transcription of recorded classes into text files, are easily identified as material contributions to student drives. We provide a new perspective to such means of production where actions such as commenting, reviewing, updating, digitising or transforming several study materials' formats are acknowledged participation methods and impact these spaces in meaningful approaches.

Access to study materials diverges across several platforms. Student-led drives are digital and more practical to access remotely. Students and Student Groups typically use Google Drive or other centralised platforms to distribute the study material. Hosts organise these folders rigorously, structuring them by course units and curricular years, collecting all the material students need over their academic journey. Student-led drives compile various study materials from *sebentas*, solved exercises, tests, exams, question compendiums, books, software, etc. These drives may vary in visibility, where access may be limited to a few students, depending on who owns these archives.

Print shops exist across physical formats. Often they are independently owned spaces where all university students can print *sebentas*, question compendiums, class transcripts and buy and photocopy books from universities' syllabi. Resources are archived within two dimensions in these spaces; some print shops have transitioned to digital archives,

where students can search through computer folders for the files they need; others still rely on physical files, which are photocopied on demand to fulfil students' requests.

There are no restrictions, methodologies to learn from, or even right or wrong procedures when hosting a Shadow Library. PSSL are independently maintained, often following the strict rules imposed by centralised platform design. Design components facilitated by centralised platforms and peers' knowledge to develop new features limits hosts of PSSL when rethinking and developing new features capable of mediating new digital interactions. Students that host such digital spaces make the most of the platform's affordances, fostering new initiatives to motivate participation and encourage broader academic involvement.

2 Methodology

We have adopted a qualitative research methodology that enabled us to integrate participants closely into our study, allowing participants to share their perspectives and experiences (Pathak et al., 2013). This methodology allowed us to collect data through procedures not focused on quantification measures. Even though qualitative research is not focused on achieving statistical representativeness, it enabled us to investigate participants' individual experiences providing a better understanding of their views (Pathak et al., 2013).

We chose semi-structured interviews as the core method for conducting our qualitative research. Interviews allow the interviewer and interviewee to connect through a conversation, facilitating the discovery of new phenomena or clarifying discussions related to the studied subject (Kvale, 1996). Interviews are particularly relevant to our study as they allow us to explore and deepen our understanding of the current publishing panorama.

During interview moments, we learned more about the participants while deviating from the interview guide, taking advantage of the interactive nature of this methodology (Edwards & Holland, 2013). Due to the nature of our sample being varied regarding interviewees' backgrounds and disciplines, we chose this interview kind to transform the interview moments into more intimate, adjusted and meaningful interactions.

Even though semi-structured interviews allow improvisation and flexibility, they require highly demanding preparation and training, resulting in many possibilities to gather valuable personal insights (Wengraf, 2006). All the interviews are anonymous to protect interview participants, as interviewed communities may feel worried about sharing specific methods to obtain and circulate study material.

2.1 Sampling

Probabilistic sampling is not considered effective in qualitative studies because qualitative research prioritises comprehending human-centred issues rather than obtaining conclusions that may be applied generally (Marshall, 1996). For our study, we followed a purposeful sampling qualitative technique. This technique involves selecting participants who are knowledgeable about the studied phenomenon and capable of contributing to the research with expressive, in-depth data (Gill, 2020).

All participants were invited to participate without incentives, to avoid bias, maintain ethical standards and respect the participant's autonomy (Robinson, 2014). Interviews were conducted between January and March of 2023. For our study, we successfully recruited 22 participants.

The criteria to select eligible interview participants was divided into two moments:

This first step helped us screen a sample that directly answers our research goals. Firstly, we interviewed a diverse sample representative of institutional, geographical and disciplinary contexts.

1. **Disciplinary:** We have interviewed participants from different faculties and understand how students, alums, professors, and other actors can impact the researched ecosystems, deploy study material using distinct strategies and reconsider digital libraries among them.
2. **Institutional:** We have interviewed a sample dispersed across multiple institutional settings, from Public Universities, Private Universities and Public Institutes. We have also interviewed students from different institutions that facilitate analogous courses. We intend to compare the differences in distribution and access across these diverse backgrounds.
3. **Geographical:** We have interviewed students from Portuguese Universities that are not located in city centres. Our goal was to cover how institutional settings more distant from urban areas can promote foreign involvement between the production and study of research material.

The second step was instrumental in deepening our research hypothesis with grounded background research. We interviewed a representative portion of the ones involved in Portuguese Students Shadow Libraries streams of access. After analysing the stakeholders within these streams of access and production, we split these interviews into four different groups:

1. **Representatives from Student Groups:** Students often organise into groups dedicated to compiling, uploading and reviewing the study materials.
2. **Students producing:** The second group we intended to investigate is students who compile, produce and make available the study material.
3. **Students consuming:** The third group of actors are students and alums who mainly consume the study material published.
4. **Teachers:** The last group we will interview are teachers who produce and indicate resources present on PSSL.

Our sample brought together students, alums and professors from varied backgrounds, disciplines and institutions. We aimed to combine a diversified sample through external and internal diversification. We ensured the presence of diverse participants inside the research context and integrated the presence of multiple actors inside specific research contexts. We have interviewed participants from all faculties of the University of Porto and single cases from the University of Lisboa, Algarve, Coimbra, Aveiro, Trás-os-Montes e Alto Douro and from a European university. We have interviewed students from different courses inside single faculties to document how access to study materials may vary inside homogenous contexts. Our sample was also capable of reporting

how teaching methods may differ through interviewing professors from universities and institutes.

2.2 Thematic Analysis

After transcribing the interviews, we re-listened to the audio files and cross-checked the transcribed text. This method allowed us to verify their accuracy and ensure no errors in the output text, thus confirming the validity of the interviews. The resulting transcriptions emerged as valuable instruments for future interpretation and comprehension of the analysed interviewee perspectives (McLellan et al., 2003).

We have used Thematic Analysis as the primary method to analyse the gathered results. This methodology is a widely employed qualitative research method used to document patterns within the collected data, organising and describing them through a methodical approach (Braun & Clarke, 2006). Tuckett (2005) reports that there is no consensus regarding the thematic analysis's precise definition and methodological process.

The systematic nature of this methodology enables researchers to infer consistent interpretations from the collected data (Alhojailan & Ibrahim, 2012). Thematic Analysis is a flexible methodology that can be employed in a wide range of qualitative data. We chose this methodology because it can generate reliable research hypotheses (Boyatzis, 1998).

After preparing all the interviews, we started coding, the process of classifying and segmenting data into meaningful structures that make evident patterns, themes and concepts across the gathered data (Elliott, 2018).

We focused on identifying patterns, creating categories and dividing codes into thematic and conceptual groups. We refined the codes, made connections and established several degrees of relation amongst them. This step was instrumental for preparing the data analysis and creating a meaningful structure from which we created the following analysis narrative.

During this paper, we will present the output analysis, which established a comprehensive outline of future possibilities and fundamental necessities identified by the studied participants. This component addresses new ideas and concepts that can be implemented to improve the digital platforms already available to students.

To ensure we respected all advice and ideas presented by participants, rather than only focusing on explicit recommendations identified, we aimed to identify suggestions, missing features, missing resources and unique concepts that were not common among all participants. While some findings might not represent the whole population, this step is conducive to understanding how particular initiatives can be re-designed and applied to a broader population, serving more students within a shared academic context.

3 Findings

Findings collect theoretical approaches to improve Portuguese Students' Shadow Libraries', making them more valuable to their users and reimagining innovative processes to publish and access disseminated study resources. We actively question what

characteristics make Portuguese-Student Shadow Library relevant to their public and what speculative features present users envision.

We have broken down the upcoming analysis into five themes (Table 1):

1. **Users as Hosts, Users vs Hosts**: We examine how the roles of users and hosts are interchangeable, where actors bear responsibility for the material they upload and make available for their peers while deriving benefits from these spaces.
2. **Editing, Curating and Reviewing**: We illustrate that Editing, Curating and Reviewing are crucial steps to creating a pertinent digital space and ensuring published materials are relevant.
3. **Enhancing Quality and Validity through collaboration**: We report initiatives and future mechanisms for sustained and validated knowledge production.
4. **Enhancing Communication**: We report the need to promote communication among students, professors, alums and other academic entities, proposing a new perspective where all actors can coexist and be protected.
5. **Reconsidering: browsing, archiving, preserving and distributing:** We document participants' exploration of opportunities for archives that can go beyond the traditional parameters.

Table 1. Identified Needs

Themes	*Codes*	*Features*
Users as Host, Users vs Host	Power Structure	Reconsidering participants' hierarchy when Manipulation, Deleting and Enforcing several resource distribution structures
	Systematic Approval	Dissolving the need for Hierarchical Roles
Editing, Curating And Reviewing	Commenting	Implementing feedback methodologies and Incite Peer Discussions
	Rating	Implementing a set of comprehensive statistics; Quantifying characteristics such as author's reputation and others
	Transparent Updating	Displaying Provenance; Reporting updates' history
	Mentoring	Implementing formal Advice Streams
	Expiring	Flagging Old Files; Self-archiving
Enhancing Quality and Validity through collaboration	Professors assisting Students	Implementing mechanisms that ensure Accuracy and Validity

(*continued*)

Table 1. (*continued*)

Themes	*Codes*	*Features*
	Students assisting Professors	Benefiting from Students' Practical Knowledge
	Integrating Students as Professors	Professors Prompting Production; Students facilitating workshops on practical skills
Enhancing Communication	Implementing new channels	Implementing class forums and real-time collaborative platforms that promote student participation
	(re)Integrating Alums	Rebuilding the community; Reduce peer's dependence on centralised platforms
Reconsidering: browsing, archiving, preserving and distributing	Anonymity as a Feature	Integrating alternatives for distinct degrees of anonymity
	Sharing the web	Present the capacity to archive the perishable web through mechanisms as web-to-print
	Archiving Centralised Platforms	Archive content disseminated through centralised platforms like Whatsapp and Google Drive
	Sharing documentation	Enabling the dissemination of: Cookbooks; code; comments
	Publishing Self-Initiated Projects	Disseminating peers' self-directed research
	Making Public	Publishing peer's curricular work and communicating it
	Displaying licences	Enabling to choose from several publishing licences; Enriching peers' knowledge about copyright regulations
	Federated Access	Distributing access across distinct Organic Units
	Browsing Library Catalogues	Implement strategies to reference Library Catalogues; Share Library Resources URLs

3.1 Users as Hosts, Users vs Hosts

Archives that disseminate study materials rely on the academic community to produce and submit new resources. These initiatives enable updating and maintaining existing digital spaces, keeping them relevant to students dependent on them. Responsible students or student groups commonly perform tasks such as adding new resources, controlling existing ones, and moderating user interactions; we will name them *hosts.*

Interview participants reported that enacting the role of hosts is a demanding task. At the same time, hosts must maintain a level of criteria that ensures a healthy flow of knowledge being uploaded, preserved and made attainable across shared digital spaces; they are also required to control the dissemination of relevant materials, standing reliable for the resources circulated.

Who is entitled to enact such roles and how they will exercise their power is controversial. If these initiatives are frequently informal, it is also true that we have documented cases where there is a democratic process for choosing representatives that will guide peers' interaction in digital community spaces. Participants identified the need to organise themselves, forming hierarchical structures that are often well-defined. These structures connect individuals whose hierarchical positions are fluid, continually varying from hosts to users, as they also depend on such ecosystems.

Participants expressed caution regarding how hosts may exercise their power to manage contents that should be accessible to fellow users. They reported that manipulating or deleting the files would be elementary, making the content unavailable if anyone could edit the files. We have identified the demand to revise such power structures where there is a dire requirement to manage streams that disseminate and produce knowledge. Still, it is imperative to ensure that such governing processes are performed, as they are required to preserve archives' capacity to answer student needs.

Participants noted it as paramount to reconsider in what terms new contributions can be added to their archives and made publicly available. While it seems positive to make it easier to upload newly produced knowledge because it would increase the amount of content available, it is equally essential to ensure that these new materials are relevant to users that access them.

Participants suggested the implementation of an intermediate submission step. This step would exist between the submission of new resources and their publication. This solution introduces a methodology where a collective of individuals would verify the relevance of a specific document, filtering materials unsuitable for public access, preventing the distribution of irrelevant or repeated content. This procedure would increase the community's capacity to regulate submissions, creating a stream that is less dependent on individual hosts and more on collective action and regulation.

3.2 Editing, Curating and Reviewing

Students find themselves overwhelmed with publications that only result in published noise, making it harder to distinguish between valuable study materials and those they should avoid. This happens across several media and disciplines, from books present on library shelves, deprecated files stored in drives that are comparable to dusty library shelves, to online searches when students are in search of visual references to support their artistic research.

Dissolving the borders between curating and editing, making both activities leading players in collecting knowledge, is an important exercise when creating a relevant digital space. While there is a need to collect newly produced material, there is also the demand for editing, reviewing and archiving content that is being served online but currently does not serve anyone. Students identify that documents must be up-to-date, but creating, collecting and validating new materials is demanding. These challenges mandate students

to perform critical roles in the knowledge distribution and production ecosystem, where users, hosts, and curators may not be formally designated.

Participants noted that if the methods to comment on published Drives' resources were more accessible, it would result in more students seeking additional intervention rather than only consuming the material made available to them. Participants added that rather than leaving a classification on a material, other users could benefit from more meaningful reviews.

Suggestions indicate that using statistics within a digital sharing platform could also verify the quality of shared materials, which happens similarly to online film ratings. Rating of documents could be calculated by taking into account their year of publication, downloads, number of comments, among other alternatives that have to be redrawn, ranking them on a linear scale. Participants recognised that it is not as important to check how many times a document was downloaded; rather, it would be more insightful to document and clarify how a resource has changed during a set time.

Participants in the study reported that uncategorised study materials resulted in wasted time and resources. Furthermore, students would often print several unnecessary materials only to select the ones they would find relevant. Printing several *sebentas* resulted in more money being spent by students and was particularly damaging, having negative environmental implications.

Students have developed strategies to facilitate the selection of study resources. One method that is earning popularity involves resorting to student mentors. Student Mentors help their mentees study, guiding them amongst which materials they should use and sharing informal insights based on their experience. Even though such a strategy is effective, it can only reach a limited scope of students enrolled in mentorship programs. It would be valuable to share such experiences with a broader audience to leverage such strategies, transforming these informal transmissions of advice into formal streams.

Another alternative introduced would encompass archiving content from the main drive. In addition to this, older content could be flagged with a warning when it passes a specific expiration timeframe. This method would make it straightforward for students that a resource is not recent and should be used taking a critical view.

3.3 Enhancing Quality and Validity through Collaboration

During our interviews, participants reported that the main concern with disseminating knowledge produced by students is assuring that the materials circulating amongst peers are scientifically validated. Students and Professors are interested in ensuring that the materials shared amongst them are accurate so that they contribute to the quality of curricular units and the overall course.

The quality of documents shared online can vary as different students produce these contributions. Creating mechanisms that aid knowledge production in a sustained and scientifically validated approach is essential. A few efforts already exist that aim to cover such assumptions. Still, it is vital to understand how to use validated examples and ensure communities frequently employ them.

One intervention stood out from others we had previously encountered. Professors are producing textual materials alongside students, more specifically, transforming class presentations and slides into curricular unit text supports. On a particular curricular unit,

professors opened a call for students from previous academic years to partake in this collaboration.

The implementation of these strategies provides valuable study materials while at the same time enhancing the quality of the curricular unit, making sure that study materials are more exhaustive. Such a strategy offers future students better quality material, conferring a higher validity status to such production. Although there is no monetary compensation, the participation of students in these streams of knowledge production is valued due to its formative experience.

Current collaborative forms involve creating textual materials that support the materials professors present during classes. It consists of creating textual materials that address class topics previously identified by students as deficient. They are also responsible for replying to students in the class forum, always with the support of professors.

Participants reported that studying by *sebentas* had a negative connotation. These were regarded as shortcuts used by students who did not want to have the hard work of studying through published books. Initiatives like the one we presented revoke such ideas and motivate students to initiate such types of production. To improve the production of textual studying resources, professors recognised the importance of collaborating in developing such resources, ensuring accuracy and consistency, and endowing student-produced material as valuable contributions.

Before the interviews, it was not expected that professors prompt the production of study material. This example indicates the contrary, Participant 11, a professor, revealed that as a teacher, it was challenging to efficiently and equitably evaluate students for the practical aspect of its curricular unit. With such a problem, a group of professors presented an equally innovative solution. Professors proposed students create study material to help future peers study.

Participant 21 reported another initiative where the students association would organise workshops inviting technically proficient students to teach their peers these practical skills. Afterwards, they would archive these informal classes and make them available for future students within a Google Drive. Such initiatives hold extreme relevance because they are not bound to a specific moment and remain relevant for future access. Rather than creating a moment with immediate benefits, they created a resource that could be revisited by students who were present and shared amongst students who would benefit in the future.

3.4 Enhancing Communication

Archives that distribute study material are not only represented by current students; they represent students, professors, alums and other entities that contribute through formal and informal activities. Participants reported that efforts that promote collaboration and exchanging information, ideas and resources are necessary and currently lacking. We must reconsider in what ways digital spaces can facilitate the growth and development of current and past community members that are both active and inactive, but that have contributed to existing streams of knowledge production and sharing and that can continue to be valuable actors in such ecosystems.

Multiple participants indicated the development of a forum feature as a tool they would highly benefit from. Participant 01 suggested this forum could be an engaging

space where students can discuss bibliographic references and raise questions about specific subjects. In the Portuguese context, integrating a forum to support curricular unit teaching is not a new endeavour. We have documented successful initiatives where students could post questions on a space provided by Moodle and where the teaching staff could swiftly make replies visible to the whole class, as well as failed attempts where students of the class were working professionals studying after regular work hours and therefore were more interested in asking their questions during classes, prioritising student-to-professor interaction.

Participant 01 reported another strategy that is not common in the Portuguese context. While doing their masters at a European university, students used *Etherpad*, a real-time open-source collaborative editor (Etherpad [2011] 2023). During the classes, all students would connect to a collaborative working page and would participate by sharing links and writing annotations during classes, an initiative that could be easily adapted to the Portuguese context.

Despite the decline of Facebook's usage, a theme discussed exhaustively across students and alums; it is compelling to see persistent freelancer requests and calls for possible collaborative initiatives among peers in this space. Participants recognised the need for a specific online feature or forum that encourages informal alums' communication while preserving a non-institutional feel. Returning to Facebook, a platform from which users fled, demonstrates alums' need to connect with former peers.

We identified the need to archive knowledge gathered informally and formally in a shared space. Not only do we identify the interactions between professors and students as meaningful, but we feel that it is crucial to promote the exchanges between students-students, students-alumni, and alumni-alumni. A new perspective where all of these actors cohabit might be an endeavour that could impact in meaningful ways how the academic community functions as a whole and how students continue to be an active part of the academy after their graduation.

3.5 Reconsidering Browsing, Archiving, Preserving and Distributing

What archives become possible when rethinking ways of navigating knowledge consumed and distributed through unstable communication channels? Does it make sense to think of an archive that can only serve published resources validated and produced by students? Can we use these spaces to share new types of resources, from web references to self-initiated projects that do not fit into a category expected to hold and disseminate outcomes of student production rather than their process?

During this section, we will cover a few innovative possibilities, presenting participants' thoughts and suggestions to rethink fluid approaches to building archives, disseminating content, displaying authorship of produced materials and others.

The level of anonymity granted across dissemination platforms was not a consensual matter across participants. Although repositories are usually shared among trusted peers, participants indicated concerns concerning the demand for anonymity of authors who also pursue recognition for their work. Contrary to the trend towards defending anonymous uploads, students often take pride in their work and desire to be credited for their produced material. There is a clear divergence in the expectations of distinct participants.

Participants identified that study materials continue to be actively produced and shared, however, the lack of archiving and documentation of these materials results in a potential loss of potential resources for future students. Students are experimenting with new collaborative ways to create study material, often through informal communication streams such as WhatsApp groups. These collective efforts strive to improve the quality of study material, even though shared knowledge usually ends up forgotten because there is no stream established where students or student nuclei organise and archive such documents for access by future students.

Archival platforms such as print-shop archives, Google Drives, and others often prioritise making resources available for students while they are studying and preparing for formal evaluative assessments. However, participants reported the need to expand knowledge archived beyond resources that summon sporadic visits, proposing the creation of strategies that facilitate use and augment meaningful interactions through continuous usage.

While student production is often not regarded as copyrighted material and can be used without restraint, the same thing is not true when students share books and other closed-access resources. By publicly displaying licences, students would be encouraged to reconsider the resources they are sharing online, as well as demonstrate which resources students can use without problems when they start their working life and may revisit these archives. This strategy would also promote awareness among students regarding copyright regulations, enabling them to publish knowledge online in informed terms they have agreed upon.

At the University of Porto, it is not uncommon for students to have the chance to attend optative curricular units offered by faculties outside the one they attend. These initiatives allow students to get to know other organic units inside the university and get to know different peers, professors and alternative teaching styles. It would be highly beneficial if students could access archives from other faculties within the university, as academic paths are often intertwined, and restricting students' access limits opportunities for interdisciplinary learning.

Contributions were not limited to the presented topics. Other suggestions, such as: helping peers navigate library collections by referencing physical study materials through URLs; sharing practical assignments with peers to inform their practice; and overall making study resources more circulated, are some of the endeavours identified as relevant across interviews.

4 Conclusion

This thematic analysis dissected the collection of theoretical approaches to promote existing libraries' capacity to integrate a broader comprehension of what it means to participate in the production of study resources. Furthermore, it prompted an innovative reimagination of knowledge production, publishing practices and access to community-produced resources.

This study presents the ability to investigate further individual functionalities, which can be experimented with as unique experiences, to develop current and potential components that students can adopt when designing digital platforms for disseminating study

materials. Moreover, we aim to explore promoting strategies for community engagement and ascertaining ways to incorporate students in conceptualising and producing a framework that can be referenced.

While collaborative methodologies can support the design and ideation processes, we identify the need to build tools and alternatives that students can manage independently. By providing autonomy in further platform development, we assure students can take ownership of these spaces, exploring their creative potential and enabling independent decisions that fit their needs.

Throughout the presentation of the findings, our intention was not to encompass all the possible lines of action identified. We sought to present a representative overview of participants' perspectives, demonstrating that unique disciplines, students, and contexts have different needs. Such diversity should always be considered when creating a space oriented towards the whole academic community rather than focusing on specific individuals.

Integrating diverse community members from the preliminary design stage resulted in insightful contributions that helped us illustrate and validate our assumptions and provided comprehensive insights for designing our framework. Adopting a qualitative research methodology proved highly effective when applied to the design process. It allowed us to collect and document crucial insights that support the development of a framework where community members are the end-users and leading contributors.

This work documents the first phase of the design and development of a framework to preserve and distribute the collections collected across PSSL. These interviews allowed us to create a public who is interested in continuing to advise our research and that has shown their willingness to work closely with us in the future.

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References

Alhojailan MI, Ibrahim M (2012) Thematic analysis: a critical review of its process and evaluation. West East J Soc Sci 1(1):39–47

Boyatzis RE (1998) Transforming qualitative information: thematic analysis and code development. SAGE

Braun V, Clarke V (2006) Using thematic analysis in psychology. Qual Res Psychol 3(2):77–101. https://doi.org/10.1191/1478088706qp063oa

Edwards R, Holland J. (2013) What is qualitative interviewing? Bloomsbury Publishing. http://www.doabooks.org/doab?func=browse&uiLanguage=en&queryField=What+Is+Qualitative+Interviewing?&x=0&y=0

Elliott V (2018) Thinking about the coding process in qualitative data analysis. The Qual Rep 23(11):2850–2861

Etherpad (2023) Etherpad: A modern really-real-time collaborative document editor. [JavaScript]. The Etherpad Foundation. https://github.com/ether/etherpad-lite (Original work published 2011)

Gill SL (2020) Qualitative sampling methods. J Hum Lact 36(4):579–581

Kvale S (1996) InterViews: an introduction to qualitative research interviewing, First edn. SAGE Publications, Inc.

Marshall MN (1996) Sampling for qualitative research. Fam Pract 13(6):522–526. https://doi.org/10.1093/fampra/13.6.522

McLellan E, MacQueen KM, Neidig JL (2003) Beyond the qualitative interview: data preparation and transcription. Field Methods 15(1):63–84. https://doi.org/10.1177/1525822X02239573

Pathak V, Jena B, Kalra S (2013) Qualitative research. Perspect Clin Res 4(3):192. https://doi.org/10.4103/2229-3485.115389

Robinson OC (2014) Sampling in interview-based qualitative research: a theoretical and practical guide. Qual Res Psychol 11(1):25–41. https://doi.org/10.1080/14780887.2013.801543

Tuckett AG (2005) Applying thematic analysis theory to practice: a researcher's experience. Contemp Nurse 19(1–2):75–87. https://doi.org/10.5172/conu.19.1-2.75

Wengraf T (2006) Qualitative research interviewing. Biographic narrative and semi-structured methods (Reprint). Sage Publications