

Collaborative Research for Career Progression of Library and Information Science Professionals in University Libraries in Nigeria

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Abstract

As the world becomes increasingly complex by the day, different forms of collaboration has become critical and researchers are coming together through collaborative efforts to make informed decisions and solve complex problems, especially in universities. Collaborative research among diverse groups of academics is now highly promoted by institutions and funding agencies, and very often provide a form of mentoring and support to younger researchers. By combining the strengths of multiple perspectives, collaborative research creates a stronger foundation for the development of new ideas and solutions. Collaborative research has become the key to developing solutions that can have a significant impact on the society or on a profession, including the Library and Information Science (LIS) profession. This opinion paper therefore, examined collaborative research for career progression of LIS professionals in university libraries in Nigeria. It discussed the concept of collaborative research; various types of collaborative research needed by LIS professionals for their career progression such as, collaboration within the institution, interdisciplinary collaboration etc.; elements of collaborative research, benefits of collaborative research, and challenges of successful collaborative research such as problem of sharing responsibilities and credits, conflicts, poor communication, name tagging, etc. The paper mapped out strategies for a successful collaborative research such as clear communication, collaborative agreement among others. The paper recommended that LIS professionals who participate in collaborative research must consider the ethical implications of research and to ensure that the rights and privacy of participants are respected, among others.

Key Words: Collaborative research, Career progression, LIS professionals, university libraries.

Introduction

The importance of university education in national development the world over cannot be over emphasized. This is because university education does not only expose students to new research and technology but encourages creative and independent learning on students through which development is achieved. *Encyclopedia Britannica Inc.* (2010:222) defines a university

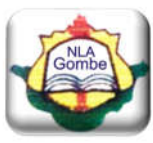


as an “institution of higher learning, usually comprising a college of liberal arts and sciences and graduate and professional schools, and having the authority to confer degrees in various fields of study”.

The objectives of any university, whether public or private all over the world is teaching, learning, research and community development. To fulfill these objectives, and to meet the challenging demands and expectations of the university, libraries are established in universities. These libraries are referred to as university libraries. A university library is a library that is dedicated to aid in university education; a type of academic library institution for the university community, and a resource centre for teaching, learning, research and activities related to the operation and management of the university as a whole (IGI-Global, 2020). Chikezie and Okezie (2018) describe a university library as “a type of academic library which is located within the university that houses information materials in both print and non-print resources in order to make them available to information seekers within its community and beyond”. A university library is a resource centre for teaching, learning, research, and activities related to the operation and management of the university as a whole. University libraries offer access to a vast collection of resources, including books, journals, research papers, and multimedia resources. They also provide study spaces, research support service, and access to technology resources such as computers and their accessories (Library and Information Science Community, 2023).

For university libraries to effectively and efficiently fulfill their obligations to the parent institution, it must recruit various categories of staff among which are Library and Information Science (LIS) professionals. According to Martinez-Arellano in Kalu, Okai and Ikoro (2016), LIS professionals are those who are professionally trained in the field of Library and Information Science. LIS professionals constitute all those who received professional training to work in libraries and other information centres. LIS professionals serve as custodians of printed materials, records, photographs, audio-visual materials, and ephemera, in both digital analogue forms. LIS professionals include librarians, archivists, bibliographers, media specialists and other information practitioners that depend on the organization, processing and delivery of information for a living. Their job involves the development, collection, organization, evaluation and dissemination of information in all its forms, including the channels (formal and informal) and technology used in its communication. LIS professionals in Nigerian universities are categorized under academic staff, and their promotion viz-a-viz career progression is guided by the NUC Guidelines for Appointment and Promotion of Academic Staff. The guideline specifies that, “the academic output and productivity of any academic staff can appear in a number forms, notably publications, creative works, patents, and key contributions to policy” (NUC Draft Guidelines for Appointment and Promotion of Academic Staff, 2018).

Career progression is the act of moving forward in one’s career; also referred to as “climbing the ladder” at work (University of Warwick, 2021). In fact, career progression can take many forms, including being awarded more responsibility within the role you already have, moving to a different department or taking on new challenges, and increasing one’s skillset and competencies through training and development opportunities. Showing progression in one’s career through promotion or sideways demonstrates one’s ability to adapt to changes to one’s workload and cope with more responsibility, which are valuable characteristics to have in any job. A study by Van der Wal, Thorogood and Horrocks (2021) revealed that collaboration enhances career progression in academic science, especially for female researchers.



Collaborative research can be seen as partnership between two or more parties who work together to achieve common research goals. According to Fine (2023), collaborative research is any research project that is carried out by at least two people. Collaborative research can be seen from the global, regional or local perspective. Conchi and Michels (2014) aver that motivation for international research collaboration include research organization and researcher reputation, higher visibility, opportunities for multidisciplinary research, access to research funds and mentoring of younger researchers. International collaborative research projects often provide findings beyond what one team could achieve alone. Bansal et al. (2019) argued that while research is the foundation for forming knowledge, collaboration is a strategy to deal with problems that seem challenging to solve individually. Collaborative research among diverse groups of academics is now highly promoted by institutions and funding agencies, and very often provide a form of mentoring and support. However, in as much as collaborative research is promoted by academic institutions and funding bodies, it is not yet clear how and to what extent collaborative research enhances career progression of LIS professionals in university libraries in Nigeria. It is against this background that this paper critically x-rays collaborative research and career progression of LIS professionals in university libraries in Nigeria.

The paper is in six segments namely concept of collaborative research, types of collaborative research, collaborative research and career progression, challenges to collaborative research, strategies for successful collaborative research, conclusion and recommendations.

Concept of Collaborative Research

Collaborative research can be defined as partnership between two or more parties who work together to achieve common research goals. According to Fine (2023), collaborative research is any research project that is carried out by at least two people. It involves coordination between the researchers, institutions, organizations/or communities (Bansal et al, 2019). In the context of market research, it is a way for researchers from different backgrounds, such as industry and academia, to bridge the gap between the theoretical and the practical (QuestionPro, 2023).

Fine (2023) observes that collaborative research happens in many ways, and is more common in some fields than others. It is much common in the sciences and less so in the humanities. Often researchers will choose to collaborate when a project is large or involves a lot of researchers pooling their areas of expertise together. Usually, the goal of collaborative research is to publish the results, and the researchers will divide up the work of writing the reports and navigating the publication process, all aimed at finding solution to a complex problem. Basically, collaborative research is built on mutual understanding, mutual interest and beneficial research.

University of Warwick (2021) argues that for successful collaborative research to thrive, the following elements must be present:

- i. Collaboration must establish channels for open communication among research teams.
- ii. Partners should be engaged where they should provide feedback and engage in self-reflection.
- iii. Collaboration should define the clarity of roles and responsibilities.
- iv. Establish a professional environment and to respect different cultures of different organizations.



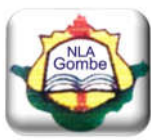
- v. There should be identification of stakeholders which can serve as the feedback loop as it will help better to understand cause and effect.

Collaborative research could take place at the global, regional and local level. Global or international research collaboration refers to research projects that involve active participation of investigators whose primary institutional affiliations are in different countries. Although they may be substantial variability in the scope of such international projects, they are basically characterized by the joint nature of the research processes across national boundaries. In each case, cross-national teams jointly initiate, undertake and report empirical research in an area of common interest (American Psychological Association, 2015). According to Powels (2020), success in international research demands participation in networks and inter-organizational linkages with continuous communication. The implication is that data from different national contexts must be gathered and compared, taking into account that team members in the research projects may have contrasting cultural and disciplinary backgrounds, and work within organizational conditions for conducting research (Dusdal, et al., 2019).

Collaborative research at the regional level involves collaboration between geographical or geopolitical regional universities, industry and other higher education providers. The aim is to help regions develop their research strengths. In most cases, collaborative research involves setting up regional research collaboration programme, which supports funding for the research between regional universities, industry and other higher education providers, helping to address the challenges associated with undertaking research in regional institutions; improving support for regional areas by strengthening rural research capacity (Australian Department of Education, 2023). According to Asia-Pacific Network (2023), Competitive Regional Research Programme (CCRP) promote regional research that has potential to improve understanding of global change and its implications, which contributes to a sound scientific basis for policymaking in areas affected by global change. The State of Queensland (2021) notes that regional collaborative research requires regional governance framework based on the following principles: each region has a set of unique characteristics that shape the regional partnership model; regional collaboration requires a governance model, plans and guidelines on how implementation is to occur; issues that extend beyond regional boundaries, including the relationship with state agencies and how different regional groups might interact. The regional collaborative governance framework highlights the need for multilayered structure to support the engagement and active engagement of stakeholders and across different industry and community sectors.

At the local level, collaborative research involves working together with local partners and other relevant participants such as government agencies, donors, NGOs and community groups, to achieve common goals and outcomes. Collaboration at the local level has gained a great deal of traction among individuals, communities, organizations as institutions seek to build upon existing networks to accomplish initiatives. However, in practice, effective collaboration at the local level consistently present challenges. Successful collaborative research at the local level must be able to recognize that collaborative efforts are a complex process that involves connecting the unique motivations of various organizations with a clear common goal (University of Central Arkansas, 2023). Elements of successful collaboration at the local level, according to Markharm (2023) include:

- A clear common goal
- Understanding of participants' motivations
- A small diverse group of core participants
- A local, well respected champion to promote the effort



- Small scale initial projects
- A focus on activities and
- Equal share in the final outcome.

Types and Forms of Collaborative Research Open for LIS Professionals

There are various types and forms of collaborative research, which LIS professionals can engage in to further their research experience. At a broader level, collaborative research could be homogeneous or heterogeneous. Homogeneous collaborative research involves individuals or groups that share similar backgrounds in terms of their expertise, and research interests. Heterogeneous collaborative research on the other hand involves individuals or groups with diverse backgrounds or perspectives.

However, whether homogeneous or heterogeneous, LIS professionals can engage in these types of collaborative research:

i. Collaboration within the Institution: In this type of collaborative research, LIS professionals can collaborate with other professionals from other departments within the same institution in areas of related interest. Such collaboration can help to solve complex research problem.

ii. Mentor-Mentee Collaboration: This is simply a collaborative research approach involving a senior professional (Mentor) and a junior colleague (mentee). Ubogu (2019) conducted a study on mentoring for professional development of academic librarians in Nigerian university libraries and found out that mentors mentor their mentees through conferences, seminars and workshops, and that it is beneficial to younger academic librarians in that it equips them for more challenging tasks ahead.

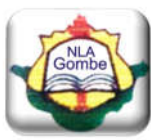
iii. Multi-Institutional Collaborative Research: This type of collaborative research involves researchers from different universities or organizations working together on a project. This type of collaboration can create opportunities for networking and sharing resources, as well as create a large pool of research data and resources (Fanelli and Laviviere, 2016).

iv. Collaboration with other Institutions: In this type, LIS departments or libraries from different institutions may collaborate on a given research project that would benefit the two institutions in terms of exchange programmes. Libraries may collaborate in cooperative cataloguing or use of internet bandwidth, etc.

v. Research Collaboration with Persons from other Institutions: In this type of collaborative effort, a researcher collaborates with persons from other institutions on a specific research work. A LIS professional (senior researcher) receives funding from a funding body, such as TETFund and collaborate with other LIS professionals, especially younger ones from other institutions. In this case, the junior professionals may be given the responsibility of collecting data from the target population (Beaver, 2013).

vi. Collaboration based on Task Expertise: Research is made up of several parts (data collection, conducting an experiment, result analyses, reviewing literature, etc.). In this type of collaboration, LIS professionals with expertise in different areas of research collaborative based on some mutual agreements. In this case, the research project is shared based on areas of aptitude of each researcher or comparative advantage.

vii. International Collaboration: In this type, in order to gain more global perspective of the research problem, LIS professionals from different countries collaborate to research on a particular project or coauthor papers. Leahey (2016) and Musselin (2018) have observed that currently, competition on multiple research levels transform universities, as individual and collective actors are simultaneously embedded in diverse nested and interdependent competitions. International collaboration is associated with higher-quality research than national collaborations, and internationally coauthored papers tend to have greater research impact (Adams, 2013).



ix. Community-based Participatory Research: It involves community members and LIS professionals working together to develop and conduct research that addresses the needs and concerns of the community. It could involve the establishment of a community library. In this circumstance, the community is an equal partner in the research process and the LIS professionals provide professional advice for its successful establishment. The ultimate goal is to satisfy the information needs of the affected community.

x. Interdisciplinary Collaborative Research: This type of collaborative research involves researchers from different disciplines working together to address a complex research question. This type of collaboration can combine different perspectives and expertise to gain a better understanding of the research topic. Librarians and ICT professionals may collaborate to establish an institutional repository in a university. This type of research allows for a more comprehensive understanding of the research problem and can lead to innovative solutions (Bansal et al. (2019).

Collaborative Research and Career Progression of LIS Professionals

There is no doubt that collaborative research when carefully adopted by LIS professionals will go a long way to facilitate their career progression. This can be achieved in the following ways:

i. Increased efficiency and learning: Collaborative research is one of the most efficient ways of sharing information, expertise and insight which can result to learning and breakthroughs in new areas that may not have been well explored by LIS professionals such as Dublin Core Metadata Standards, Minnesota Metadata Guidelines, Artificial intelligence and other metadata standard texts (Aransiola, 2023).

ii. Improved outcome and productivity: Collaborative research is a process and not an event or a product. It involves having a good idea and also sharing with others and getting feedback to improve implementation of that idea. Collaboration leads to higher quality research than individual-based work. Dusal and Powell (2021) note that collaboration across organizational and cultural boundaries extends the possibility of discovery, and often provide findings beyond what one team could achieve alone. It has the capacity and potentials to improve the quality and personal outcome of LIS professionals in the work place.

iii. Sharing Research expertise: this is a basic component of career progression. Through collaborative research, LIS professionals can now share their expertise relating to modern trends in librarianship.

iv. Higher publication impact: Collaborative research does not only increase impact of publications, as researchers give more citation attention to collaborative works, but results in increased number of publication attributed by each contributor. Today LIS professionals often engage in multiple publications as a result of collaborative engagements.

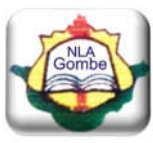
v. Application of wider array of techniques: Collaboration across departments, institutions and disciplines widens the access to a greater number of techniques and experience used in research. The adoption of wider techniques as applied by different departments, disciplines and institutions could lead to career progression of LIS professionals.

vi. Funding: Experience have shown that getting research funding in Europe and the US is much easier in the context of collaboration. Today, Nigeria's TETFund encourages collaborative research, especially at the interdisciplinary level.

Challenges to Collaborative Research and Career Progression of LIS Professionals

Even though collaboration is widely encouraged in contemporary research, successful collaborations have not come without major challenges and draw backs, which often inhibits achieving desired goals towards collaboration. This can be attributed to many reasons such as:

i. Difficult to Manage: Collaborative research can be difficult to manage, especially when multiple parties are involved. It can be difficult to ensure that everyone is on the same page,



with similar expectations and goals. It can be difficult to ensure that every member of the research group is held accountable for their work (Aransiola, 2023:12).

ii. Sharing of Responsibility and credit: When two or more persons partner in a research work, sharing of responsibilities and credit for the work often becomes a source of problem. Quarrels and disagreement can result from who actually contributed more in the work. Even though the collaborators may have had different levels of collaboration, the sharing of credit may not go down well with some persons, especially where institutions share publication points according to positions of the contributors.

iii. Name tagging (add my name syndrome): This is becoming a dangerous trend in collaborative research, especially in this part of the world. With the increasing demand for publications as criteria for promotion of academic staff in many academic institutions, the research behavior of most academics have been influenced by the desire to meet up with the publication requirements set by various institutional authorities. This has resulted to a situation where collaborative research, which in itself is much desired approach to research is abused by name or “add-my-name syndrome” (Aiyegbelehim, 2021), to the effect that many supposedly collaborators do not have minutest idea of the subject of discussion. This should be discouraged in all ramifications.

iv. Takes Longer Time to Complete: With more people involved, there is a greater tendency of disagreements, delays and miscommunication. This can lead to research projects taking longer time to complete than if one person was in charge.

iii. Funding: This could be another source of disagreement among research collaborators. Sometimes, the ratio of financial contribution compared to levels of intellection contribution results in serious problem. While some may argue for equal contribution, those who contributed more intellectually may feel cheated.

v. Conflicting working styles: This is another major challenge of collaborative research. Some collaborators are discontent with a slow collaborator, and disagreement about what, where and when to publish complete research work.

vi. Invisibility of Younger Professionals: The American Psychological Association (2015) observes that though collaborative research can provide opportunities to advance knowledge production, yet there are implied challenges, risks and drawbacks. The advantage of joining forces and finding synergies of expertise incorporates the risk of invisibility of single researchers within the larger team. Particularly, younger researchers may be subsumed, while principal researchers may not be involved in the day-to-day research because their main responsibility is to compete for funding and manage teams

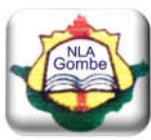
Strategies for a Successful Collaborative Research

Despite the challenges to collaborative research, partners can develop effective strategies for successful, efficient and effective collaborative research through the following:

i. Avoiding conflicts: It is often argued that there is no relationship or association without conflict. So when LIS professionals collaborate in research there is bound to be a level of conflict. But it is advisable to avoid or reduce such conflicts to the barest minimum. Sometimes what is more important is how such conflicts are resolved, as lessons are learnt from such conflicts.

ii. Create collaborative agreement: This is a good tip for a successful collaborative research. It is necessary to create from the beginning a collaborative agreement that would specify who does what. Collaborative agreement is a good way to reduce or avoid conflict in collaborative research.

iii. Clear communication: Members of the research team must establish and maintain clear communication channel. This is where a correspondence author becomes necessary in relating with a publisher or a journal. It brings a level of understanding among the partners. A



communication gap may result in conflict that may undermine the good intention for the collaboration (University of Oxford, 2022).

iv. Specify authorship: In collaborative research, every person has a certain role. To avoid confusion and disagreement in future, team members should agree on authorship right at the beginning of the project. It is also necessary to specify the position of authors in the publication.

v. Clarify who gets access to what information: Not all the parties involved in the research would have access to all the data. Before the work is started, it is important to have a clear discussion with team members regarding who will get access to what data.

vi. Team play: Collaborative research may bring together people from different background, perspectives and world view. Sometimes it might get difficult to adapt to all the different ways of thinking and working. For a successful collaborative research therefore, the participants should be flexible and receptive to new ideas. They should be effective team players.

vii. Measure and communicate your success effectively: To make sure the research goes on smoothly; you should frequently communicate the status of your research to all the parties involved. In order to communicate efficiently, clearly lay down the ways you will measure your objectives. This way, you will be able to demonstrate whether your research is on the right track, or it needs some improvements.

Conclusion and Recommendation

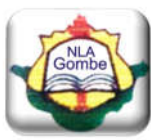
Collaboration indeed is a powerful approach and a valuable tool for researchers in many different fields and from diverse backgrounds and in some cases institutions to work towards a common goal. When properly harnessed, it promotes the sharing of ideas and resources and can lead to new discoveries and advancements. Today, it is encouraged by academic institutions and research funding bodies. By combining the strengths of multiple perspectives, collaborative research creates a stronger foundation for the development of new ideas and solutions. Various literature on collaborative research agree that collaborative research has the capacity for increased efficiency of learning; improved outcome and learning; increased publication impact and sharing research expertise among LIS professionals in Nigeria. Indeed, effective collaborative research can lead to career progressions and self-development of LIS professionals. It is important to keep in mind, however that collaborative research demands dedication and cooperation among the participants in order to achieve success.

The paper therefore recommends as follows:

1. Participants in collaborative research must consider the ethical implications of research. For example, collecting all data in an ethical manner, and that the research is conducted in accordance with the principle of professional ethics.
2. The lead researcher should ensure that the rights and privacy of the participants are respected, and all participants kept abreast of the research process.
3. LIS professionals engaging in collaborative research should maintain effective communication at all levels of the research, knowing that clear communication is essential for a successful collaborative research.
4. LIS professionals participating in collaborative research should have mutual understanding and mutual interest on a given project or research topic.

References

- Adams, J. (2013). The Fourth Age presentation. *Nature*, 497(4751):557-560. Google Scholar
- Aiyebilehin, A. J. (2021). "Add-my-name" as a parody of research collaboration among Nigerian researchers. *Ethics, Integrity and Policy*, 29(1):45-54.
<https://www.doi.org/10.1080/08989621.2021.1894935>. Epub.2021/Mar16.PMD.33625281



- American Psychological Association (2015). Engaging in international collaborative research. <https://www.apa.org/>
- Aransiola, O. J. (2023). Collaborative research: What it is, types and advantages. <https://www.formplus.us/collaborative-research/>
- Asia-Pacific Network for Global Change Research (2023). Regional research: A key pillar of APN's science agenda. <https://www.apn-gcr.org/>
- Bansal, S., Mahendiratta, S., Kumar, S., Sarma, P., Prakas, A. & Medhi, B. (2019). Collaborative research in the modern era: Need and challenges. *Indian Journal of Pharmacology*, 51(3):137-139. https://www.doi.org/10.4103/ijr.ijp_394-19
- Beaver, D. D. (2013). The many faces of collaboration and teamwork in scientific research. *Collnet Journal of Scientometrics and Information Management*, 7(1):45-54.
- Bit.Ai Blog. (2022). Collaborative research: definition, benefits and tips. <http://www.blog.bit.ai/>
- Chikezie, A. N. & Okezie, C.A. (2019). Constraints of information accessibility and information seeking behavior of undergraduates in universities in eastern Nigeria. *The Research Librarian*, 12:18-31.
- Conchin, S. & Michels, C. (2014). Scientific mobility: An analysis of Germany, Austria, France and Great Britain. Fraunhofer ISI Discussion Papers. Innovation Systems and Policy Analysis, No.41 Karlsruhe: Fraunhofer ISI
- Department of Education, Australian Government (2022). Regional research collaboration programme. <https://www.education.gov.au/the-regional-universities-and-industries/>
- Dusdal, J. & Powell, J. J. W. (2021). Benefits, motivations and challenges of international collaborative research: A sociology of scientific case study. *Science and Public Policy*, 48(2):235-243. <http://doi.org/10.1093/scipo/scabo10/>
- Encyclopedia Britannica Inc. (2010). *Compton's by Britannica*, Vol.24. Chicago: Encyclopedia Britannica Inc. p.222. <https://www.britannica.com/university>
- Fanelli, D. & Laviviere, V. (2016). Researchers' individual publication rate has not increased in a century. *Plos One*, 11(3):27-36. <https://doi.org/10.1371/journal.pone.0149504>
- Fine, M. (2023). What is collaborative research? <https://www.allthescience.org/what-is-collaborative-research?/> IGI-Global (2020). Meaning of university library. <https://www.igi-global.com/what-is-university-library?>
- Iowa School of Library and Information Science. (2023). Meaning of library and information science. <https://www.slis.uiowa.edu/>
- Kalu, A. U., Okai, E.D.J., & Ikoro, F. (2016). Building the competencies of library and information science professionals for effective information services delivery and sustainable development in Nigeria. *The Research Librarian*, 10(1): 1-11.



- Leahey, E. (2016). From sole investigator to team scientist: Trends in the practice and study of research collaboration. *Annual Review of Sociology*, 42:181-100. Google Scholar.
- Library and Information Science Community. (2023). Functions of a university library. <https://www.lisedunetwork.com/>
- Markharm, J. (2020). Effective collaboration at the local level. <https://www.uca.edu/cced/files/202/04>
- Merriam Webster Incorporated. (2023). Research definition. <https://www.nuc.edu.ng/>
- Musselin, C. (2018). New forms of competition in higher education. *Socio-Economic Review*, 16 (3): 657-683.
- National Universities Commission (NUC). (2014). NUC Benchmark Guidelines for Appointment and Promotion of Academic Staff <https://www.merriam-webster.com/>
- Nature Research (2020). Collaborative research skills have become essential to scientists: A survey report. <https://masterclass.nature.com/collaboration-in-research-report/17097466>. Google Scholar.
- Question Pro. (2023). What is collaborative research? <https://www.questionpro.com/>
- State of Queensland (2021). Regional collaborative framework: Enhancing ueensland's local government biosecurity capacity. www.daf.qld.gov.au/pdf-file/regional-collaborative-framework/
- University of Central Arkankas (2023). Effective collaboration at the local level. <https://uca.edu/effective-collaboration-at-the-local-level/>
- University of Oxford (2022). Guidance on good practice for research collaboration. <https://www.support.admin.ox.ac.uk/>
- Van der Wal, J. E. M., Thorogood, R. & Horrocks, N. P. C. (2021). Collaboration enhances career progression in academic science, especially for female researchers. <https://doi.org/10.1098/rspb.221.0219>
- Weebly (2023). What is collaborative research? <https://artificialheartarchive.weebly/collaborativeresearch/>
- Western Sydney University (2021). Definition of research. <https://www.weternsydney.edu.au/definition-of-research/>