

METHODS OF APPLIED RESEARCH IN FHK MASTER STUDIES

in the scope of
Re/Search
Practice-Oriented Lecturer Research

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RE/SEARCH

Practice-oriented Lecturer Research

FHK's (Fontys School of Fine and Performing Arts) ambition is to become an inspiring research community of practice. FHK considers research not just as a matter of theory, but also as part of practice. Research elements are interwoven in curricula at FHK and much more research within FHK exists than we are currently aware of. Since 2021, FHK promotes lecturers to set up and conduct research in-house, as we can learn from each other and from practice. Ten selected lecturers have started research proposals to explore and to improve their own artistic and / or artistic educational practice within their study programs. The ten selected lecturers are: Carry van Bokhoven, Tobius Frenssen, Jan Willem van Kuilenburg, David Lima-verde, Ned McGowan, Jacqueline Moors, Anne-Sophie Ramsteijn, Aart Strootman, Danae Theodoridou and Mirjam van Tilburg.

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INTRODUCTION

About this paper

FHK is focusing on creative processes, and it is important to be able to distinguish which types and components of applied research approaches can be instructive, applicable, and productive for tutors and students at specific FHK Master Studies.

This paper tries to identify these valuable components within various research approaches, that can be understood, and possibly be used, to construct dedicated research methods for the Master Studies at FHK.

Applied research can play important roles in creative processes, can enhance curricular and educational development through a wider circulation of knowledge and can enhance students' skill sets and projects at fine arts and stage-oriented master disciplines at FHK; even more if applied consciously and pro-actively.

Creative works in many creative disciplines are depending on some sort of design process and, in the end, will deliver a design; be it an urban strategy, a building, a product, a choreography, a music arrangement or a performance. All students that are involved in these processes, and in the creation of these products, can be considered designers. We also can be aware that any creative project is unique and depends on, and belongs to, its own authentic and specific mindset.

Where does my interest for applied research come from? From my training in Architecture at TU-Delft, my position as coordinator-tutor at the graduation studio at MA+U, my professional position as principal of Monolab Architecture & Urbanism, and from my previous positions as an architect in various practices, like as a design team leader at OMA with Rem Koolhaas. I have experienced many times that productive effects and outcomes of applied research methods can be further enhanced by pro-active selection, tuning, and tweaking of available research components.

Jan Willem van Kuilenburg, 17 November 2021

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Field

The field of research focusses onto the six master studies of FHK; in alphabetical order: Architecture, Choreography, Education in Arts, Music, Performing Public Space, and Urbanism. In order to dig into experiences at FHK, the master studies are expected to deliver clear insights as training in research approaches has been deployed.

Process

1. Preparing and listing online and literature research as a survey of various approaches of applied research and explaining own experiences in research and design,
2. Drawing up diagrams that identify the various available research approaches together with their processes, components and characteristics,
3. Composing a questionnaire that is to deliver information on applied research approaches at the six FHK Master Studies through open questions,
4. Harvesting of information through a series of online interviews among tutors and alumni of the six FHK Master Studies on the basis of the questionnaire. Per study two interviews take place; one with a tutor and one with an alumna or alumnus,
5. Processing of information by reflecting on the findings and drawing up a pro-active FHK Tool for Applied Research Methods,
6. Documenting and reporting via this paper in pdf format.

Interview research partners

The selection of heads, tutors and alumni of FHK Master Studies for interviews:

Fontys Master of Architecture + Master of Urbanism (MAU)

Tutors Martijn Honselaar, Pieter Feenstra, Jan Willem van Kuilenburg and alumnus Nicky Kouwenberg.

Fontys Master of Choreography + Codarts Rotterdam

Head of School-tutor Dirk Dumon and alumna Carmen Raffaella Küster.

Fontys Master Education in Arts

Tutor Emily Huurdeman and alumna Sophie de Ruijter.

Fontys Master of Music

Tutor Emlyn Stam and alumna Emily White.

Fontys Post Master of Performing Public Space (PPS)

Tutor Danae Theodoridou and alumna Helen Scarlett O'Neill.

RESEARCH QUESTIONS

methods of applied research in FHK master studies

research questions:

Which kinds of applied research approaches ⁽¹⁾ are currently deployed in creative processes ⁽²⁾ within the six FHK master studies of Choreography, Education in Arts, MA+U Architecture, MA+U Urbanism, Music and Performing Public Space?

To which extend are these approaches appreciated, valued and applied ⁽³⁾ by tutors and students?

Are there any proven approaches that can be deployed more systematically ⁽⁴⁾ in these contexts?

Can dedicated research approaches be composed from a component library ⁽⁵⁾, distilled from known research approaches?

#1 meant here are various types of research, providing practical solutions to specific challenges by pointing the process in the right directions in a process of reflective inquiry.

#2 processes in which design plays a role: the making of a choreography, spatial design, a music arrangement, or performance are all considered design processes.

#3 proven and successful methods that are experienced by tutors and alumni during education at FHK.

#4 systematic deployment is meant to be pro-actively incorporated, instead of being applied by intuition and/or trial and error.

#5 suggested here is that research approaches can be broken down into components, of which a selection can be rearranged into new, tuned, hybrid-like research approaches.

SUMMARY & CONCLUSIONS

a tool for applied research

We have tried to build a Tool for Applied Research for students and tutors of the Master Studies at Fontys School of Fine and Performing Arts (FHK), that is supposed to enable them to be more conscious about ways of research and to pro-actively define specific applied research processes as part of their authentic creative processes within personal projects. In order to build the tool, we have analyzed applied research approaches from various sources, distilled the components and translated these in diagrams. Subsequently we have interviewed tutors and alumni of the six FHK master studies and we have added components to the tool with these insights. The tool delivers kinds of research profiles of master's study curricula and the tool assembling these can be instrumental for a designer, a team, an assignment or project and can be adapted at any moment.

Can a pro-active approach in terms of applied research help to enhance creative processes, projects and products? The current tool presented in this paper is still in its embryonic state and would require a follow up for further testing, fine tuning and learning.

a structural and integrated approach for applied research at FHK

Throughout all Master Studies at FHK, applied research is acknowledged as of vital importance and it makes the foundation of their curricula and teaching. Lots of efforts are deployed already into the development and improvement of these parts of curricula at individual FHK Master Studies. The interviews tell us that applied research is tweaked and tuned in various ways at all individual Master Studies. Because of ever developing educational formats and curricula and our ever-developing societies, applied research demands constant attention with continuous tweaking and tuning. Considering FHK, this happens in most cases at a high pace, but also without too much exchange of findings between Master Studies at this point yet.

...'and Jan Willem, what do you really think about the tool?...'

'Well, that depends on you. In what ways would you like to deploy the tool yourself? The tool is customizable and seems multipurpose to me. It basically has two directions: you can look ahead and pro-actively foresee a path and navigate through all research components to serve or facilitate a specific upcoming design process. You also can look retro-actively at a design process to see which specific research profile the project underwent. I consider it a process driven tool, via the process steps in the top and also as a mind-expanding tool if you consider the many possible components of research in the vertical columns. Personally, I think the pro-active qualities of the tool are the most important because I follow that pro-active way of working myself and I have experienced the many benefits of

more powerful, compact and precise research phases, stronger concepts and more exciting discoveries along the creative process towards design products. I hope the tool will be picked up and can play a role in education and creative practices. For next year I am planning to deploy the tool in my own teaching at FHK'.

FROM RESEARCH TO DESIGN

FROM RESEARCH TO DESIGN

Research in creative processes

Various approaches of applied research can play important roles in creative processes and can enhance the development of education, including the circulation of knowledge by tutors and the project results of students within fine arts and performance-oriented master disciplines at FHK; even more if applied consciously.

Creative works in many creative disciplines are depending on some sort of design process, and in the end, will deliver a design; be it an urban strategy, a building or a product, a choreography, a music arrangement or a performance. All artists involved in these processes, and producing these products, can be considered designers. Creative projects are unique and depend on, and belong to, their own specific mindset. This mindset is shaped by the hypothesis of the project, and it develops during research, steering the designer through the continuing creative process. Results of research, and subsequently a greater awareness, do tune the designer brain. Research happens partly ahead and partly during design. Practically speaking, usually most of applied research is still carried out intuitively and is interlaced with the design process and the design; we call this design research in which intuition can be a powerful driver and a sharp instrument in the hands of designers. The issue of this paper is not to favor any technique, format, or approach, but more to focus towards the question on the horizon: *Can a pro-active approach in terms of applied research help to enhance creative processes, projects and products?*

Unique mindsets

As every creative project is unique, it deserves and requires a specific designers' mindset that is tuned to the specific creative process belonging to the project. The mindset is a way finder in that sense, as it can find its way through complex and unclear creative processes that mostly happen during design. The mindset can also clarify the often-subconscious processes that usually take place during design. Findings of research enhance reflection and enable designers to put their mindset in a certain mode that is more in sync with the specific project or assignment. *Results of creative processes in applied arts largely depend on applied research because research findings are directly applicable and deliver the mindset through which the creative process has navigation and guidance. Instead of being solely in a state of grand creativity, stepping sideways and allowing insight in specific methods of applied research will help tutors and students in artistic master studies to focus more pro-actively, conscious, and well informed. From my experience this can have a fundamental impact on their creative processes and results.*

Non-linear processes

Usually, the main body of research goes ahead of the design phase and after that more specific research is intertwined with ongoing design later in the process.

Usually creative processes are non-linear, as things happen parallel and through reflective loops that are steered by the critical attitude and reflection of the designer. In most design

processes research is not deployed very structured and the ways it happens mostly are steered by intuition and subconscious processes that are very different per designer or project and complex to fathom, trace and map.

Naïve state

Ahead of any phase of applied research, an opportunity exists to remain in a naïve state for some time, not being affected by any research findings yet. *In the state of naivety restrictions do not exist; the mind is free and can be consulted for its own embedded authentic experiences, knowledge, and skills.* The moment research has started, as findings are being explored and documented, this initial state of naivety will be lost and will not be able to recur in the same state. This is not a bad situation, if a naïve approach has had the opportunity to deliver insights and conclusions in the first place. How extended this state of naivety should be, to be productive, is different in every design process.

The lesser trained

Students and lesser trained designers cannot lean fully onto their experience yet and mostly are worried during the research phases of processes, when design is about to start. *Worries are about the fear of being too little informed, aligned with the idea that this would have detrimental effects on design.* However, an extended phase of research usually delivers an overabundance of research findings that will complicate design, and at least cause delay. In many cases this growing mountain of findings will make deployment complex, will obscure potentially productive design directions, and can lead to a multitude of weaker design directions. More is not always best.

The experienced

Experienced designers are aware that it is not primarily about the quantity of research findings, but about the selection process that leads to constructive and productive findings. They know that the application of broad, generic research will deliver lots of generic findings. Usually only a few percent of these findings will be applied for design in the end. *A key question at this point is: what are the right directions and places to probe, to go for the right few percent of findings straight away?* If pre-defined applied research is deployed, this makes the selection of 'the right findings' even more important. *Design can be informed by relatively little findings, if it sprouts from key directions, and these will be different in every possible project.* For example, in one case it could be a historic narrative or reference, in another case a societal issue, or a geography, a cultural issue, perhaps programmatical issues, health or environment, a certain music composer, a certain given stage set, a specific reference project, and more complicated, a mix of several issues. *The optimum of research findings can be defined by the progress of design; the inherent logic of the design-in-the-making will tell*

the designer if it would require more research findings, or if the creative process could continue without. This implies that the processes of research and design should ideally happen in a parallel format, and should overlap to a certain extent, to inform each other. This would open a window to a reasoned, personal position and mindset.

Shared ways of working

From my own experience, as being involved in many design processes in both professional and academic environments, applied research has improved the results of design processes to a great extent and has opened shared ways of working and shared ways of communicating among different disciplines.

That said, types of applied research per discipline will vary, will even be different per project as every creative project is unique and requires its own unique mindset. *What would be the effects of the inclusion of a description of the type (or components) of applied research, foreseen ahead, at the very beginning of a project within the project's hypothesis or research question?*

Research typologies and profiling

Various kinds of research exist. These can be displayed in diagrams that map the approaches of research together with their components and properties, like for example: process, ideas, framework, data analysis, summarizing and communication. With a critical eye, three kinds of findings can be derived from the diagrams:

1. missing opportunities within the applied types of research per master study,
2. various powerful components of different design approaches assembled in a library,
3. connections between research approaches that possibly trigger and improve processes and projects.

Research hybrids

Reasoning in terms of a possible library of components, some questions arise:

Could a more conscious application of specific components, emerging from different types of research, inform better design and could this stimulate co-operation between designers and even unite creative disciplines that operate through different design processes? To unite creative disciplines, do overarching applied research methods exist or would it be possible to deploy assemblages of components of different research approaches? Through the technique of assemblage, could we make research approaches easier to tune per master study or even tailored to, and made for, specific projects?

Into design and prototyping

Design by itself can be considered a way of research. *Contrary to linear processes that mostly are very vulnerable to disruptions, parallel processes -as a real time overlap of applied research and design- can be very fruitful and productive. By zigzagging or jumping from one to the other, design and prototyping can inform research and vice versa.* This might speed up the creative process and make it more insightful, while documented and integrated results are being created, instead of just having thoughts on possible

outcomes, without any -or with less- clearly documented proof.

Interdisciplinarity

Interdisciplinarity in a process or project can be organized by pushing and pulling, but in those cases it is forced, imposed from outside, and participants will feel and act less responsible and rather wish to stay within their own field. *Contrary to the forced format, interdisciplinarity can be evoked by demanding assignments that require the close co-operation of various disciplines to cope and meet the challenges and subsequently fulfill the embedded opportunities of the assignment.* In this mode it will move participants to cross borders and operate in-between disciplines. If the brief of an assignment is based upon its embedded higher ambitions, it can steer and propel interdisciplinarity in more pro-active ways.

Jan Willem van Kuilenburg

INTERDISCIPLINARITY IN DESIGN

Interdisciplinarity in design

In current design practice, boundaries between conventional design disciplines, together with products and services, are blurring. As new needs and professions emerge, people from traditionally separate disciplines have started to collaborate. The most common term associated with collaborations between traditional disciplines is interdisciplinarity. However, this is just one level at which such a collaboration can exist.

Literature on the topic recognizes four levels of collaboration, across which disciplines become increasingly interwoven: multidisciplinary, crossdisciplinarity, interdisciplinarity and transdisciplinarity.

1. *Multidisciplinarity* describes the concept of various disciplines working together and being able to relate themselves to each other. In doing so, the disciplines become familiar with each other's perspective and are able to communicate with each other, although they do not intersect in terms of methods and concepts.

2. *Crossdisciplinarity* involves a dominant discipline in need of specialist knowledge to solve problems within their own domain, thus collaborating with other disciplines. The dominant discipline is able to effectively communicate with the supporting disciplines, and integrate some of their methods and concepts.

3. *Interdisciplinarity* revolves around various disciplines aiming to solve the same problem cooperatively. As they have a shared purpose, they each benefit from each other equally. Methods and concepts are continuously shared and integrated across the disciplinary boundaries.

4. *Transdisciplinarity* concerns collaboration that comes into being when a problem is too complex for a single traditional discipline to solve. The separate disciplines dissolve into a newly unified whole in which there is no longer a clear separation between the contributing disciplines and their previously separate methods and concepts.

Throughout the different levels of collaboration it is clear that participants must be open to differences in perspectives, concepts and methods and not remain stuck in their own disciplines. If they are stuck, the collaboration has little chance of success. A certain minimum level of autonomy is required, particularly in truly interdisciplinary or transdisciplinary collaborations, that would otherwise make participants reluctant to fully commit to the syncing, integration or unification of methods and concepts.

The complete text is a summary from the sources:

- Dykes, T. H., Rodgers, P. A., & Smyth, M. (2009). Towards a New Disciplinary Framework for Contemporary Creative Design Practice. *CoDesign*, 5(2), 99–116.

<https://doi.org/10.1080/15710880902910417>

- Nicolescu, B. (2014). Multidisciplinarity, Interdisciplinarity, Indisciplinarity, and Transdisciplinarity: Similarities and Differences. *RCC Perspectives*, 2, 19–26.

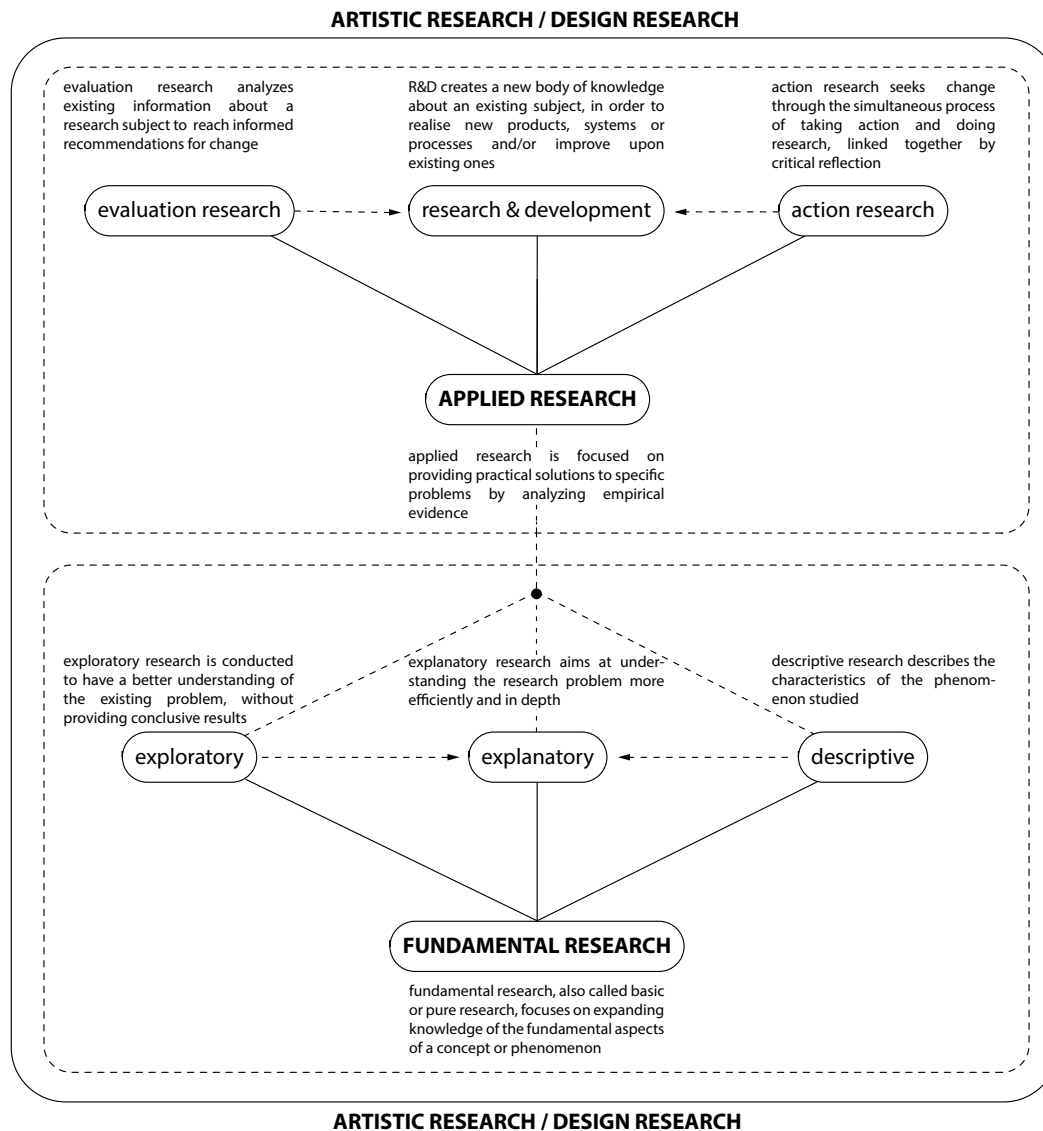
https://www.jstor.org/stable/26241230?seq=1#metadata_info_tab_contents

- Nissani, M. (1995). Fruits, Salads, and Smoothies: A Working Definition of Interdisciplinarity. *The Journal of Educational Thought*, 29, 121-128. <https://doi.org/10.11575/jet.v29i2.52385>

- Urbanska, K., Huet, S., & Guimond, S. (2019). Does Increased Interdisciplinary Contact Among Hard and Social Scientists Help or Hinder Interdisciplinary Research? *PLOS ONE*, 14(9), 1–11. <https://doi.org/10.1371/journal.pone.0221907>

RESEARCH TYPOLOGIES

RESEARCH TYPOLOGIES a survey into recognized ways of research



note 1: *Artistic research* can be considered to be very close to *design research*. Both are rather basic, made of little and simple components, and therefore able to envelope fundamental and applied research. In order to find new and more useful components, we have to look deeper into the components of applied research typologies.

note 2: Studying the various types of research, we encountered a lack of consistency between the different sources. In this diagram, we aim to summarize and display the different kinds of information we gathered in a coherent and comprehensive way.

FUNDAMENTAL RESEARCH, also called basic or pure research, focuses on expanding knowledge of the fundamental aspects of a concept or phenomenon. It can be carried out in different field and focuses on expanding knowledge on a certain subject. It is aimed at a fuller, more complete understanding of the fundamental aspects of a concept or phenomenon. It focuses on a very specific topic with oftentimes a tight research question. It is mostly conducted at universities or in a controllable 'lab' environment. It is a major means of generating new ideas, principles and theories. Typically, basic research can be exploratory, descriptive or explanatory; although in many cases it is explanatory by nature. Usually the outcomes of basic research form the basis for applied research.

Sources:

Iedunote (n.d.) *Basic Research: Definition, Examples*. Retrieved from <https://www.iedunote.com/basic-research>

Formplus Blog (n.d.). *What is pure or basic research?* Retrieved from <https://www.formpl.us/blog/basic-research>

International network for natural sciences (n.d.) *Types of scientific research*. Retrieved from <https://innspub.net/types-of-scientific-research/>

EXPLORATORY RESEARCH is conducted to have a better understanding of the existing problem, without providing conclusive results. It is defined as research used to investigate a problem which is not clearly defined. It is conducted to have a better understanding of the existing problem, but will not provide conclusive results. For such a research, a researcher starts with a general idea and uses this research as a medium to identify issues, that can be the focus for future research. An important aspect here is that the researcher should be willing to change his/her direction subject to the revelation of new data or insight. Such research is usually carried out when the problem is at a preliminary stage. It is often referred to as grounded theory approach or interpretive research as it used to answer questions like what, why and how.

Source: Question Pro (n.d.) *Exploratory research: definition and characteristics*. Retrieved from <https://www.questionpro.com/blog/exploratory-research/>

DESCRIPTIVE RESEARCH is a research method that describes the characteristics of the phenomenon studied. It is defined as a research method that describes the characteristics of the population or phenomenon studied. This methodology focuses more on the 'what' than the 'why' of the research subject. The descriptive research method primarily focuses on describing the nature of a demographic segment, without focusing on why a particular phenomenon occurs. In other words, it describes the subject of the research, without covering why it happens.

Source: Question Pro (n.d.) *Descriptive Research: Definition, Characteristics, Methods, Examples and Advantages*. Retrieved from <https://www.questionpro.com/blog/descriptive-research/>

EXPLANATORY RESEARCH aims at understanding the research problem more efficiently and in depth. It is conducted for a problem that was not well researched before, demands priorities, generates operational definitions and provides a better-researched model. Explanatory Research focuses on the 'why' of a certain problem. It provides details where a small amount of information exists for a certain product in mind of the researcher. For example: Descriptive research can tell that 20% of the students have failed in the exam. Explanatory research can tell us what the reason behind this failure is. Explanatory Research is conducted in order to help us find the problem that was not studied before in-depth. Explanatory research does not give us conclusive evidence but helps us in understanding the problem more efficiently.

Source: Yousaf, M. (n.d.) *Explanatory Research, the Ultimate Guide*. Retrieved from: <https://scholarshipfellow.com/explanatory-research-definition-types-comparison-advantages-disadvantages/>

APPLIED RESEARCH is focused on providing practical solutions to specific problems by analyzing empirical evidence. It aims to understand a specific 'real-world' problem and potentially inspire change. It strives to find information that will directly influence practice. The settings in which it is conducted can be very diverse and it often requires analysis on multiple levels, thus benefiting from multidisciplinary.

Source: Iedunote (n.d.) *Applied Research: Definition, Examples*. Retrieved from <https://www.iedunote.com/applied-research>

EVALUATION RESEARCH is a type of applied research that analyzes existing information about a research subject to arrive at objective research outcomes or reach informed decisions. It is a systematic assessment of the resources spent in order to achieve a goal.

Source: Formplus Blog (n.d.) *Evaluation Research Design: Examples, Methods & Types*. Retrieved from <https://www.formpl.us/blog/evaluation-research>

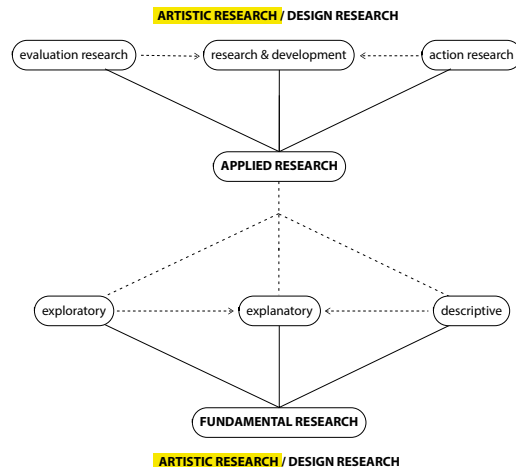
ACTION RESEARCH seeks transformative change through the simultaneous process of taking action and doing research, linked together by critical reflection.

Source: American educationa research association (n.d.) *What is action research?* Retrieved from <https://sites.google.com/site/aeraarsig/Home/what-is-action-research>

RESEARCH AND DEVELOPMENT or R&D is the creation of a new body of knowledge about an existing product or process. This resulting new knowledge is then used to formulate new materials or entire new products as well as to alter or improve existing ones.

Source: Lunendonk, M. (2019, September 18) *Research and Development (R&D) Overview and Process*. Retrieved from <https://www.cleverism.com/rd-research-and-development-overview-process/>

ARTISTIC RESEARCH



Artistic research is rooted in artistic activities, in any practice revolving around art. Such practice has unique qualities through which artistic research can bring a different perspective to the world of research.

Art exists on the terrain between disciplines, technologies and materials and moves back and forth in-between. The artist acts as a messenger, translator and connector allowing art works, audiences, concepts and desires to interact. Additionally, whereas historically art was aimed at expression, in contemporary art the purpose has shifted towards delivering experiences. As a result of these qualities, artistic activity brings together areas of knowledge and experience in new and unexpected ways.

In any research, the communication of its results and related activities is extremely important as it allows it to be tested and to be openly engaged with the existing body of knowledge. As art has become more and more public and accessible, it has opened itself up to research. That, however, does not mean that all artistic practice is artistic research. Whether an artistic activity can be considered artistic research depends most importantly on the position of the artist in relation to the work. A critical artist that questions traditions and established practices works from the perspective of a researcher, aiming to generate new knowledge. On the other hand, an artist acting within already established practices and traditions, might not be so much interested in generating knowledge, but rather in the creation of the artwork in itself as the main goal. In this case the artist would not deploy a research perspective.

Artistic research, similar to design research (which incidentally might be considered part of artistic research), encompasses three approaches to research: for art, through art and about art.

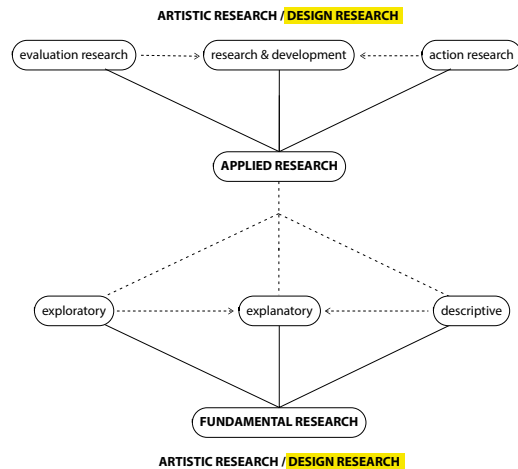
Although the methods to engage in artistic research are open and should stay that way, any artistic research process is naturally based on an interplay between engaging in artistic practice and reflecting on the artistic practice in the form of contextualization, conceptualization and interpretation.

Finally, the process consists of a public part in which results are communicated. In addition to communicating and defending research results in written documents, as a standard in other fields of research, in artistic research the artwork itself is considered an important vessel of knowledge as well.

The complete text is a summary from the sources:

- Lilja, E. (2015). Art, research, empowerment: the artist as researcher. <http://www.regeringen.se/sb/d/18297/a/252589>.
- Jochum, R. (2014). Crossing Thresholds: Artistic Practice in Times of Research. In D. F. J. Campbell, E. G. Carayannis, & G. Bast (Eds.), *Arts, Research, Innovation and Society* (pp. 101–123). Springer. <https://doi.org/10.1007/978-3-319-09909-5>
- Toto-Pérez, G. (2010). Art and artistic research. In F. Siegenthaler, T. Wälchli, & C. Caduff (Eds.), *On the Difference between Artistic Research and Artistic Practice* (pp. 30–40). Zürcher Hochschule der Künste. http://www.toro-perez.com/images/books/On_the_difference_between_arAap.pdf
- Hannula, M., Suoranta, J., & Vadén, T. (2014). *Artistic Research Methodology: Narrative, Power and the Public (Critical Qualitative Research)* (New edition). Peter Lang Inc., International Academic Publishers. <https://doi.org/10.13140/2.1.4203.3447>

DESIGN RESEARCH



Design research is research in the field of design. In general terms, two main domains of research can be discerned. They form the core of this paper and are related to the specific field of design research. Although fundamental research and applied research can exist as separate methods to inquiry, often applied research is informed by fundamental research.

Fundamental research. This research domain mainly focusses onto the expansion of knowledge and whether relationships between various entities exist. It explores, describes and explains fundamental aspects of concepts or phenomena. Generally, fundamental research is conducted in a controlled environment to allow for more flexibility and options to gather specific data. Above all, the construct of cause is important, meaning variables should be explicated clearly to draw valid and specific conclusions towards new knowledge.

Applied research. This research domain consists of evaluation research, research and development and action research. It differs from fundamental research in that it has a much more practical foundation. Whereas in fundamental research the expansion of knowledge in itself is the goal, the focus of applied research is first and foremost to understand and potentially solve a real-world problem. New knowledge can be the result of, or the means to, applied research but is not the primary goal. Research topics in applied research are often much broader, focussing on a wide array of relevant aspects. This makes it much more difficult to manage and to reject alternative theories and to construct new knowledge. Furthermore, applied research is carried out 'in the field', meaning that the researcher has less control over the situation and context and has to deal with the many constraints that the fundamental researcher can avoid. In applied research, the construct of effect is also more important than the construct of cause. Any

results must be directly relevant to understanding (and solving) a practical problem.

Research for design, through design and about design

To further elaborate on the definition of design research, we turn to a study by Frankel and Racine (2010). It is important to mention that the ideas put forth in their paper are not the focus of this paper, because our goal is not to define design research. Rather, we aim to understand how research methods and processes in applied research, as one of the core domains of research, can guide design research. Nevertheless, their ideas are useful in understanding the relationship between research and design and therefore are important to highlight in the context of this paper. Frankel and Racine (2010) argue that, within the field of design research, research can be conducted 'for design', 'through design', and 'about design'.

1. 'Research for design' can be considered research through acting with the aim of producing new knowledge directly applicable to the specific project. Thus, it has a highly practical and fairly specific focus.

2. 'Research through design' still revolves around a specific project, but its orientation is more towards research. When practicing research through design, researchers engage in a process of action and reflection in which the generalizability of knowledge becomes more important, though still being practical in nature. Research 'for design' and 'through design' are strongly rooted in applied research methods.

3. 'Research about design' is much more theoretic, not directly relating to practical problems, but rather allowing the construction of theoretic frameworks that inform the design process. Research about design is built on fundamental research and therefore its focus usually is specific.

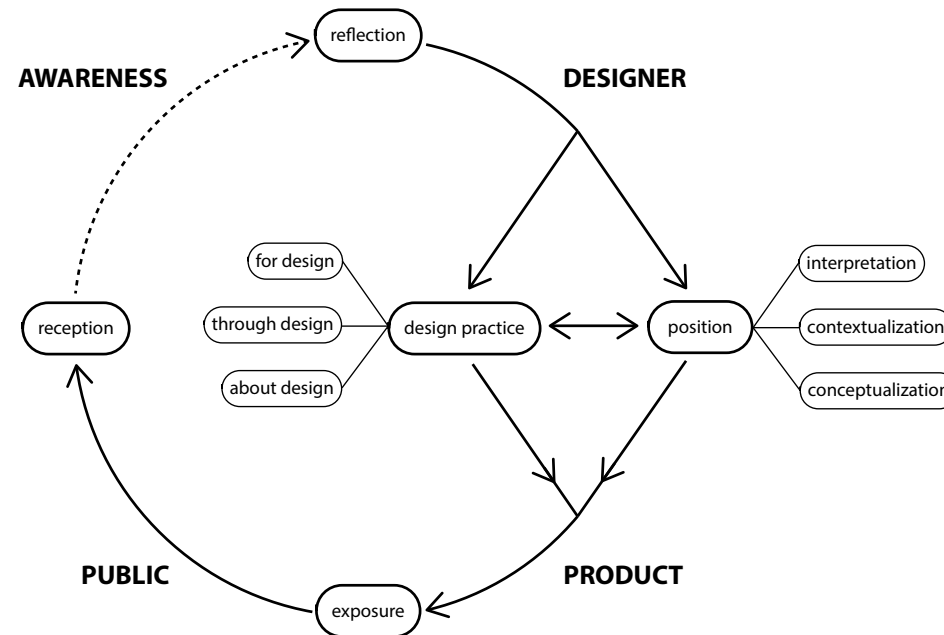
Frankel and Racine (2010) stress that the three elements of design research (research for design, research through design and research about design) must not be considered separate from each other, as they are in fact interrelated: one informs the other.

The complete text is a summary from the sources:

- Frankel, L., and Racine, M. (2010) The Complex Field of Research: for Design, through Design, and about Design, in Durling, D., Bousbaci, R., Chen, L, Gauthier, P., Poldma, T., Roworth-Stokes, S. and Stolterman, E (eds.),
- *Design and Complexity - DRS International Conference 2010*, 7-9 July, Montreal, Canada.
<https://dl.designresearchsociety.org/drs-conference-papers/drs2010/researchpapers/43>
- Downton, P. (2003). *Design Research*. Melbourne: RMIT University Press.

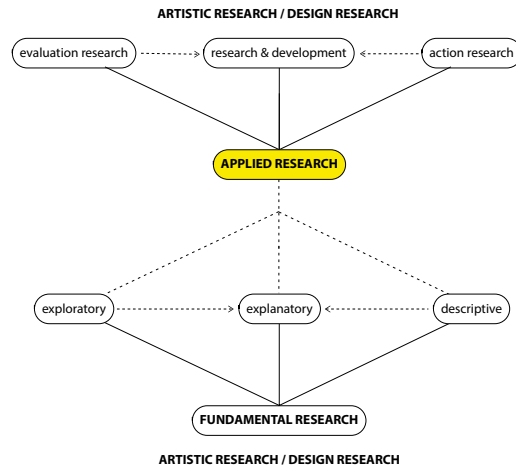
ARTISTIC RESEARCH and DESIGN RESEARCH

diagram



Artistic research and design research together embrace all different typologies within fundamental and applied research and can be considered the same. The subjective and intuitive nature of artistic/design research means that there is no 'one-type-fits-all' approach, as each process is heavily influenced by the designer-researcher and by the subject. As a result, the diagram is of a general nature, only visualizing the process and components that are at the heart of any artistic/design research process. In the following pages we aim to find out which elements of the various applied research typologies are important to artistic/design research, in order to enhance the process and create a base for an applied research approach.

APPLIED RESEARCH



Differences between applied and fundamental research

Differences in purpose

- Basic research is aimed at expanding knowledge, that in itself is the goal. The goal of applied research is first and foremost to understand a real-world problem and secondly to hopefully solve it. New knowledge can be the result of or the means to applied research but is not the goal.
- Basic research aims to uncover if relationships exist, whereas in applied research the goal is to uncover, yes, if relationships exist, but most importantly whether they are practically significant.
- Basic research focusses on a very specific topic with oftentimes a tight research question, whereas in applied research, topics or questions are often very broad, thus making it much more difficult to manage and reject alternative theories, which is required to come to new knowledge.

Differences in context

- Basic research is generally conducted in a university or academic context, whereas in applied research the settings are much more diverse. These different settings can pose very different demands on the researcher.
- In applied research, research questions are often proposed by clients whereas in basic research the research is often self-initiated.
- Applied research is more often conducted in teams and generally invites more interdisciplinarity.
- Applied research often is conducted 'in the field'. Basic research in a much more controllable 'lab' environment and therefore also much more flexible in terms of planning, with lower cost sensitivity.
- For the same reason, communication skills are much more critical in applied

research.

- Applied research is generally funded by contracts, and thus continuation of funding is rare. Basic research is often funded by grants.

- In conclusion, applied research has much more constraints

Differences in methods

- The above results in different approaches.
- External validity (generalizability) is much more important in applied research.
- In applied research, the construct of effect is important. It must be directly relevant to understanding and solving the practical problem. In basic research the construct of cause is important, meaning variables should be explicated clearly to draw valid and specific conclusions towards new knowledge.
- Applied research, contrary to basic research, often requires analysis on multiple levels, thus again benefiting from multidisciplinary.
- In applied research, quasi experimental methods are much more common.
- In applied research, observational data is often not practical or economically feasible.

In sum, due to the complexity in context, purpose and thus also methods of applied research, planning skills are even more important than in basic research.

Process of applied research

The process of applied research consists of two major steps, that are both subdivided into two sub-steps:

Planning: a. defining the scope of the research, b. making a research plan.

Execution: a. research plan is carried out and monitored, b. reporting and follow-up activities.

Planning is an iterative process, as more information often requires an adjustment of the plan, like we also see in action research.

Planning - Stage 1: Defining the scope of the research

Planning requires a lot of time. Unfortunately in applied research, more so than in basic research, time-pressure often results in skimping on these activities.

The importance of first defining the scope of the research should not be underestimated, as it is crucial to create a good research plan which increases the likelihood of its successful execution. Defining the scope of the research requires engagement in the following activities: a. developing an understanding of the issue or problem underlying the research, b. identifying specific researchable questions, c. refining and revising the questions.

a. Understanding the issue

The issue at hand is not always straightforward. At times it might be crystal clear, but the client for instance could be fixated on a certain outcome, which results in a biased research process. To ensure that research is planned ethically and accurately, the researcher needs to properly inform him/herself on the underlying issue. Furthermore, consensus needs to be reached amongst the client, the

researcher and other stakeholder parties about the main issues informing the research. This information can be gathered by: holding discussions (to obtain a clear picture of all the concerns), reviewing literature (to understand what is already known), gathering information from experts (all sides and perspectives) and visiting the site of the issue (including talking with people actively engaged involved in the issue, to gain a real-world understanding of the situation).

The gathered information together allows the creation of a conceptual framework. In evaluation research, a good method to refine the focus of the research is through the making of a logic model. Neutrality in any conceptual framework is important. If there are conflicts in information, it is important in this phase to accept this condition and not to eliminate certain perspectives, which would create bias. Furthermore, if the research focusses on just a specific section of the framework, it is important to discuss and argue why so, in order to avoid bias, and explicitly state this in the future communication of the research, whilst also mentioning which areas of the framework are not covered.

b. Identifying research questions

When the conceptual framework is in place, the research questions can also be identified. In fact, ideally the two are developed simultaneously because then questions from all perspectives are raised, even if in the end they exist outside of the agreed research scope. Mentioning and gathering information on these questions ensures that as many interested parties as possible are satisfied with the presented information. Four major types of research questions help refine the scope of most applied research plans: descriptive, normative, correlative and impact questions.

Descriptive questions are useful to paint a picture of what exists or what is happening, requiring descriptive information on the characteristics of an entity.

Normative questions require the descriptive information to be related to a certain standard. The main purpose of using such questions is to evaluate a program or studying policy implementation, thus mostly used in evaluation research and R+D.

Correlative questions are useful to uncover whether there is a relationship between two entities, but also the strength and direction of the correlation.

Impact questions ask whether change in one entity inspires change in the other. These questions are either absolute in structure or relative. Absolute impact questions directly compare two entities, relative impact questions compare various alternatives in achieving the same effect.

Of course, comparing the three alternatives has to be valid. Sometimes, impact questions, as is the case with normative questions, require information to be compared to a standard. Other types of research questions that are often based on the aforementioned questions but can require quite different research approaches, include cost questions, in which research results are translated to monetary values. Prospective questions are used to predict future situations.

c. Refining research questions

After the initial construction of the conceptual framework and the identification of the general research questions, the questions can be clarified and made more

specific. This should happen through negotiation with the client and by reaching agreements on the resources such as time and funds available for the research.

Planning - Stage 2: Developing the research plan

After the refining of the research questions the definition of the scope of the research is finalized. Now the research plan can be developed. During this stage five activities should be carried out almost simultaneously: selecting a design, choosing data collection approaches, inventorying resources, assessing feasibility and determining trade-offs.

Selecting a design

This activity is crucial to the research plan, as it determines the credibility (whether the research is valid), usefulness (whether the research answers the targeted questions) and feasibility of the research (whether the plan is realistic considering the resources). There are four types of validity; each is important, though one can be more important than the other depending on the type of research question. The four types are: construct validity (the extent to which constructs in the conceptual framework are measured successfully), statistical validity (the extent to which statistical methods are used appropriately to detect the effects that are present), internal validity (the extent to which causal conclusions can be drawn, specifically relevant to impact questions) and external validity (the extent to which it is possible to generalize from the gathered data). Every applied research study requires a unique research design. There are however three main categories. Within these classes, a huge variety of data collection methods is possible. The categories are: a. descriptive research, b. experimental research, c. quasi-experimental research.

a. Descriptive research

- Purpose and key features: to provide a picture of a phenomenon as it naturally occurs, instead of providing information on cause-effect relationships, by answering either descriptive, correlative or normative questions.

- Variations: one type of descriptive research is 'exploratory research', and aims to explore a subject, often in advance of a series of subsequent studies. A second type of descriptive research is 'epidemiologic research'. This type of descriptive research provides information on a certain disease or medical condition in a population. A third type of descriptive research is 'evaluation research', specifically 'process evaluation' and 'evaluability assessment'. The former describes how a program, policy or other intervention has come into place and any barriers that it has stumbled upon, as a guide in the early phases of its existence. The latter provides information on the evaluability of a program already in place before doing an impact (cause-effect) evaluation.

- When to use: in cases where the researcher aims to answer descriptive, normative or correlational questions, in order to gather information on characteristics of a certain entity, descriptive research is a suitable category of applied research to conduct. It can be used as a foundation for further studies as well as function as a supplement to impact research, providing a more complete

picture.

b. Experimental research

- Purpose and key features: to test whether a causal relationship exists between an independent variable (which is manipulated and varied) and a dependant variable. Internal validity is important and in order to achieve it and prevent bias, experimental research makes use of random selection of test-subjects.

- Variations: the basic type of experimental research is a post-only design, in which an independent variable is assigned to a randomized group of people and compared to a randomized group of people that have not been assigned the independent variable. Many variations to this basic principle are possible, for instance in the number of groups or measurement periods, depending on the specific research questions.

- When to use: studying cause-effect relationships.

c. Quasi-experimental research

- Purpose and key features: the same as in experimental research. However, instead of randomizing test subjects, which can often be difficult or sometimes even impossible, researchers conducting a quasi-experimental study use other methods to approximate true experimental research. When still using a comparison groups - which, because they are not randomized, are non-equivalent - the researcher aims to make the groups as equivalent as possible. Another method is to compare the situation before and after the assignment of the independent variable on the same group.

- Variations: similar to experimental research, variations can be made in for instance the number of groups or measurement periods.

- When to use: as a fallback strategy in situations where randomization is not possible.

Data collection

Various things should be considered when planning data collection: potential sources to collect data from (primary or secondary), the form of the data found and its effects on the feasibility of the study (self-report data, existing data, observational data, documents), the appropriate amount of data (considering data sources, time periods, study participants and required precision), the accuracy and reliability of the data and the design fit (whether the data fits the research design).

To collect data, the applied researcher can make use of a wide array of instruments. 'Observations' are used in instances where the researcher requires information on live or recreated events, actions or circumstances.

In measuring knowledge or performance, to save time, the applied researcher often uses existing 'tests'. The applied researcher may also wish to make use of 'data extraction forms', in which data from other sources is extracted either manually or digitally. To gather information on opinions, attitudes, memories of events etc., applied researchers can make use of 'interviews'. Depending on the research plan, they can be either open, structured or semi structured. The former two, for instance, are ideal in descriptive, exploratory studies. An action researcher can

make use of 'surveys' by mail or telephone for instance, when the same information items need to be gathered from a large group of respondents.

Finally, the researcher will also benefit from drafting an analysis plan to ensure targeted data collection and therethrough maximum efficiency throughout the process.

Inventorying resources

In applied research, as well as in basic research, researchers must conduct their study within all sorts of resource constraints. These include, for instance, the available data, time, budget and manpower. Particular relevant resources are 'data' and 'time'.

Data

Sometimes researchers can rely on existing data and other times original data is required. In the collection of primary data it is important to consider: the research site(s) (in general, it is best to focus on as few sites as possible, considering other resource constraints such as time), authorization (to prevent misunderstandings and ensure legality it is important to ask relevant parties for permission) and the data collection process (for instance, the applied researcher should not assume people are willing to participate in the study, even when formal authorization is gathered). Other practical issues, such as for instance the reliance on public transport or the need for specific equipment, also fall under this category. The analysis of secondary data is more cost- and time-friendly, but has its own limitations and difficulties. It requires specific attention into: the type of existing data (sometimes, the existing studies are not designed to answer research questions), the validity of the data (this can be considered on all aspects mentioned earlier) and confidentiality (in many cases, records containing secondary data include confidential information. Accessing these records is often difficult and costly).

Time

Research questions should be formulated in relation to 'calendar' time. Sufficient valid data needs to be available on the study subject within the set time frame.

Time and data collection: In the collection of data itself, 'clock time' is important, i.e. the time it takes to engage in the activity of data collection. It is important to estimate the clock time required to complete certain activities, in order to comply with the available calendar time.

Time budget

Both clock time and calendar time need to be budgeted. This means that the researcher needs to define how and to what the recourse will be allocated, by first describing the tasks and subtasks that need to be carried out in order to successfully complete the study.

Assessing feasibility

Assessing the feasibility of the research plan ensures that no resources will be wasted on tasks that do not answer the research question and leads to a go/no-go decision. In the event of a no-go decision, the plan can be revised. To assess

the feasibility of the research plan, the applied researcher should, for instance: assess the validity of secondary data, run pilot tests of data collection instruments to ensure their efficiency and validity, run pilot tests of processes covered in the research design to ensure their efficiency and validity and before moving to execution. The applied researcher should identify any internal or external potential confounds and estimate their influence on the results.

Determining trade-offs

Due to the constraints of applied research, it is inevitable that trade-offs have to be made. Credibility, usefulness and feasibility should be the underlying themes in making these trade-offs. The authors highlight four types of trade-offs:

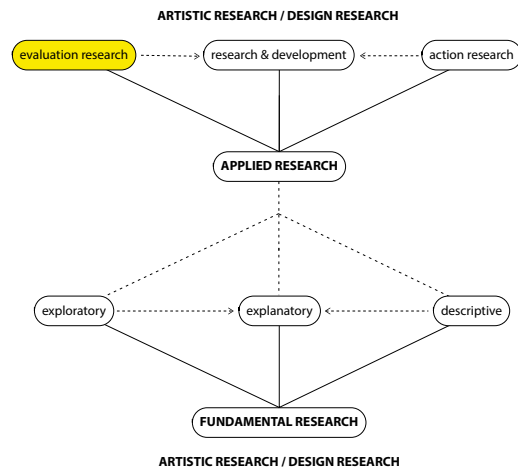
- External generalizability. In applied research it is common that, with regard to the available resources of time and money, trade-offs are made in terms of external generalizability.
- Conclusiveness of findings. Sometimes, due to for instance resources not being readily available, an applied researcher may decide that the study will benefit from an exploratory design instead of a confirmative design and thus make a trade-off in terms of conclusiveness.
- Precision of findings. Trade-offs in terms of precision are made, depending on the importance of high accuracy results which depends, for instance, on the context in which the research is conducted.
- Comprehensiveness of measurements. Often, a researcher will want to gather data on a topic through various methods to look for consistencies. However, trade-offs often have to be made between the level of comprehensiveness and the available resources by judging the importance of various potential information.

This concludes the planning step and the researcher now moves to execution.

The complete text is a summary from the source:

- Hedrick, T. E., Bickman, L., & Rog, D. J. (1993). *Applied research design: a practical guide* (Ser. Applied social research methods series, vol. 32). Sage.

EVALUATION RESEARCH



Evaluation research is a type of applied research and so it is intended to have some practical effect. Evaluation is a structured assessment conducted to determine the value or impact of a policy, programme, practice, intervention or service, with a view to making recommendations for change. The term evaluation can be described as an elastic word that is used in a myriad of contexts and that stretches to cover judgement of many kinds. However it is important to note that evaluation does not aim to replace a decision maker's experience and judgement, but rather offers systematic evidence that informs experience and judgement. As mentioned above, evaluation research can be seen as a form of applied research, the main purpose of which is not merely to generate new knowledge, as is the case with fundamental research, but to study the effectiveness with which existing knowledge is used to inform and guide practical action. Within evaluation there is a fundamental distinction between external and internal evaluation roles, with the external evaluation being carried out by an independent consultant and the internal evaluation being carried out by employees within the programme or organization.

Process

The process of evaluation research consists of five main steps: planning, implementing, analysing and reporting, acting and improving as well as reflecting. Each step covers various activities which are discussed below. Collecting the right set of information, identifying recommended actions linked to the evaluation as well as communicating the evaluation findings in an efficient and clear way to the stakeholders, are key steps in evaluation research. Nevertheless, as is the case in any type of research, the planning phase is crucial to guarantee an efficient process and a valid research outcome.

Planning

As a first task in the evaluation research process, it is crucial to identify the research goal and to understand what is to be evaluated. A so called logic model, which is a graphic depiction (roadmap) that can help to focus on the fundamental research questions, can function as a framework in the creation of the evaluation plan. The evaluation research society identifies six basic approaches to evaluation: Formative evaluation, summative evaluation, front-end analysis, evaluability assessment, programme monitoring and evaluation of evaluation.

- Formative evaluation's supports the process of improvement.
- Summative evaluation determines the overall effectiveness of a project.
- Front-end analysis refers to evaluation undertaken before a programme is adopted.
- Evaluability assessment can be seen as a sort of 'pre-evaluation' and is conducted prior to a thorough evaluation.
- Programme monitoring involves the systematic collection of information relating to the performance of a programme, the central object is to provide basic data about how a programme is delivered.
- Evaluation of evaluation covers meta-evaluation, within this approach evaluators evaluate their own work or the work of others.

Perhaps one of the most important steps at this stage is the definition of the research question, furthermore it is also crucial to understand the interest and expectations of the stakeholders, involved in the evaluation process.

In summary, the planning phase consists of the following activities:

- Determination of what is to evaluate and choosing the evaluation approach,
- Engaging of stakeholders,
- Assessing of resources and evaluability,
- Determination of research question,
- Determination of methods and procedures of measurement,
- Development of a research plan.

Implementing

In the implementation of the evaluation process, it is critical to find the right data collecting techniques as well as the most appropriate analytical procedures. There are two distinct methodological postures, the quantitative and qualitative methodology.

- *Quantitative methodology* favours what has been termed the hypothetico-deductive approach, which involves objective quantitative measurements, an experimental research design and hypothesis testing. In this methodology one or more research hypotheses are specified before any data collection takes place. The researcher forms a hypothesis which is subsequently tested by collecting facts that confirm or disprove it. Here the hypothesis remains fixed throughout the research exercise. It is important to note that quantitative methods can determine whether a particular programme has had an impact, they cannot, however, tell us why the observed result occurred.

- *Qualitative methodology* advocates an inductive research strategy. It aims to derive broad generalization from observed data. The assumption is that a clear understanding of the programme and its outcomes can only be obtained by gaining an insight into the individual experiences of programme participants. In qualitative methods of data collection the evaluator 'thinks naturalistically' and reality is approached as a multi-layered, interactive, shared social experience that can be studied by first learning what participants consider important. The research design and theory are allowed to emerge and unfold as the research progresses. This is where the so called 'grounded theory' comes in. Inductive data analysis ensures that theory is generated from (or grounded in) the data.

The choice of methods of data collection in evaluation research is strongly influenced by the evaluation problem and the situation and context in which an evaluation is conducted. If necessary, qualitative and quantitative data collection methods can be combined in order to satisfy the demands of evaluation research in the most efficacious manner possible.

The most commonly used methods of data collection in evaluation research are questionnaires, interviews and observations.

- Interviews can generate quantitative and qualitative data. There are three main types of interviews: structured, semi-structured and unstructured interviews. Interviews with a group of people are known as 'focus groups'.

- Observations of data collection are mainly used to gather qualitative data. When conducting an observation the evaluator adopts a fieldwork role. These roles are differentiated from one another according to the degree to which the evaluator participates with the subject of study. The various roles can heavily influence the research outcome. The different roles are: complete participant, participant-as-observer, observer-as-participant and complete observer.

- In the complete participant role, the people under observation are unaware of the true identity of the evaluator.

- In the participant-as-observer the reasons for the researchers presence are made explicit, this might influence people's behaviour. The field roles of observer-as-participant and complete observer are non-participatory roles. In the observer-as-participant role the contact with the informants is brief, and there is no attempt from the observer to establish a relationship with the subject.

- In the complete observer role, there is no interaction whatsoever between the observer and the informant during the course of data collection.

This phase is basically a continuous process of data collection and data monitoring. The data collection process is divided according to the type of data into a quantitative method, a qualitative method or a mixed method.

Each of these methods has its own approaches and instruments for the collection of data.

Analysing and reporting

After data collection it is analysed and evaluated. Analysis and data structuring methods are chosen on the basis of whether the data is qualitative or quantitative.

tive. A very important step in evaluation research and especially in this phase is to interpret and share the evaluation findings alongside recommended actions. Once the findings are clear, a list of recommended actions, which address the research outcome, is compiled. Stakeholders are often involved in the generation of ideas for recommended actions. Finally as part of the communication, the representation of the findings should be tailored to the interests of the various stakeholders.

The steps in this phase are again divided in quantitative and qualitative, and can be summarized as follows:

- Analysing the gathered data,
- Structuring of the research findings,
- Involving the stakeholders to generate ideas for recommended actions,
- Communicating the findings to the various stakeholders.

Acting and improving

One of the major characteristics of evaluation research is that it is intended to be of practical use; it can be seen as an attempt to serve a decision maker. In the action and improving phase, the recommendations are reviewed, together with the stakeholders, in order to identify actionable outcomes and discuss what has been learned from the evaluation. The results are incorporated, in dialogue with the stakeholders, into an action plan. The main steps in the acting and improving phase are reviewing the recommended actions with the stakeholder and the developing of an action plan.

Reflecting

Once the action plan has been created and the recommended actions have been reviewed together with the stakeholders, the evaluator should reflect on the result of the research and whether the recommended actions and findings were able to respond to the needs of the stakeholders and the initial research question. In this step an 'evaluation of evaluation' might be conducted. This reflection can inform future evaluation processes. The reflecting phase thus consists of the following two activities: reflection on the overlap between the research findings and possible 'evaluation of the evaluation', conducted by the evaluator or through other evaluators.

The complete text is a summary from the sources:

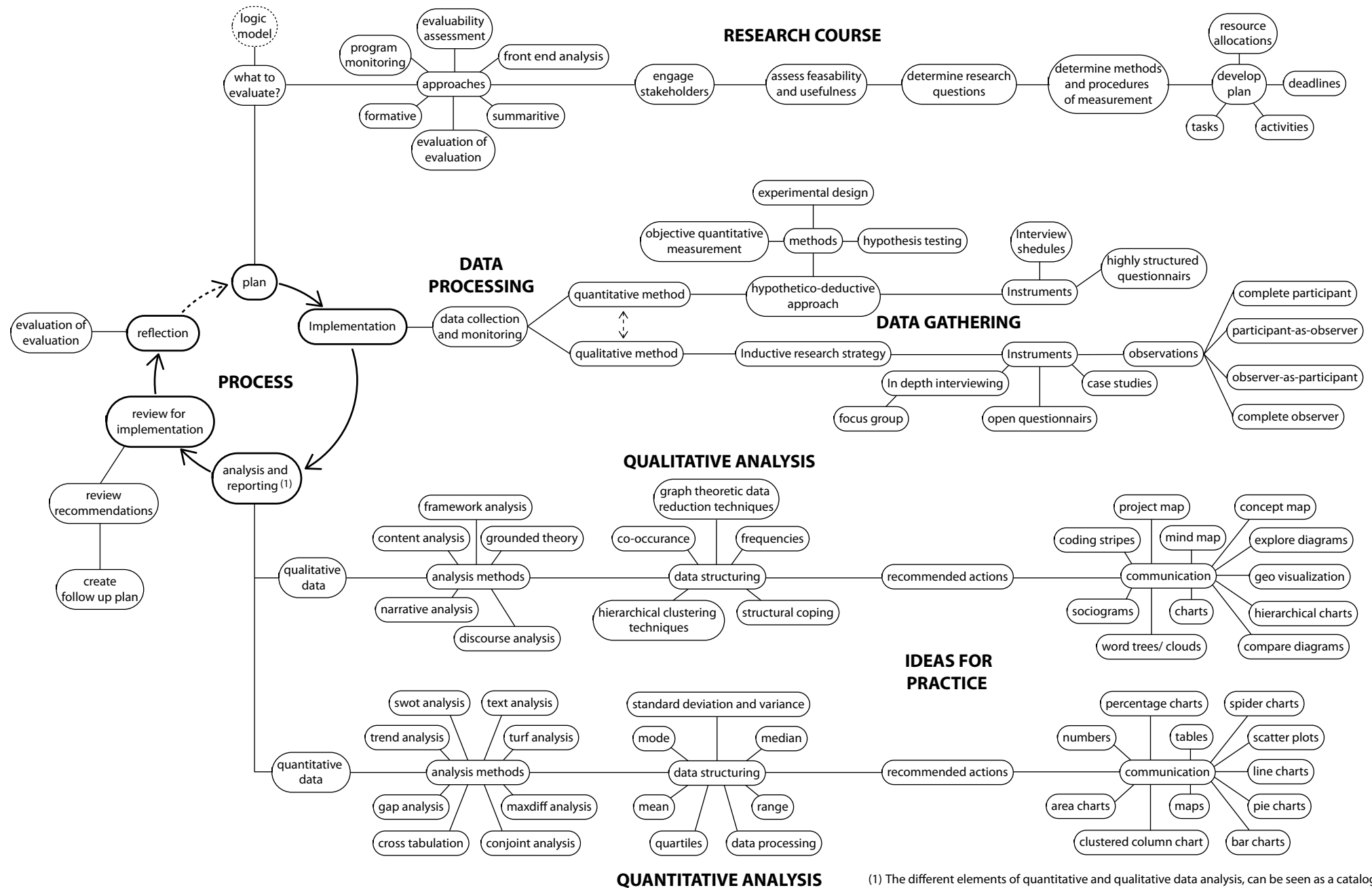
- Clarke, A., Dawson, R. (1999) *Evaluation Research, An introduction to Principles, Methods and Practice* (1st ed.) SAGE

- Public health Ontario (n.d.) At a glance: the ten steps for conducting an evaluation. Retrieved from: <https://www.publichealthontario.ca/-/media/documents/A/2015/at-a-glance-10step-evaluation.pdf?la=en>

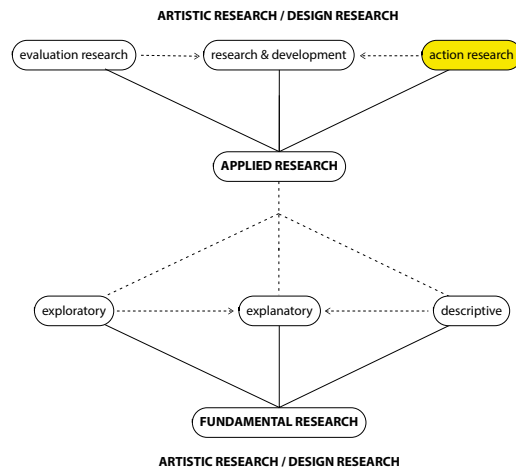
- Questionpro (n.d.) *Evaluation Research: Definition, Methods and Examples*. Retrieved from: <https://www.questionpro.com/blog/evaluation-research-definition-methods-and-examples/>

EVALUATION RESEARCH

diagram



ACTION RESEARCH



Instead of, or in addition to, evaluating processes and actions of others, as is the case in evaluation research, applied researchers can participate in action research. Action research is related to the self, an enquiry into one's own life and experiences. Nevertheless, action researchers recognize the value of others as co-researchers and critical learning partners. Thus, even though action research is rooted in personal experiences, action researchers constantly take input from others and reflect on themselves in relation to others. By consciously reflecting on their own actions, action researchers aim to gain new knowledge to first improve their own acting and only thereby inspire improvement in others. Because of this, action researchers do not worry too much about harmonizing with others and finding a single truth, but instead accept individual differences.

Action researchers accept that the ways in which people act are a result of implicit or explicit motives and are grounded in personal values. Values differ from standards in the fact that they are a personal interpretation of standards. For instance, five star hotels need to comply with various standards in terms of room size, furnishing, service etc. However, two people are likely to (at least somewhat) disagree on the value of these qualities. To action researchers, the underlying values that inform their actions are extremely important. Making the origin of such values explicit, allows for a deeper understanding of the problem and is therefore crucial to imagining ways forward. As action researchers set out to dissect their values, they should always be critical and reflect on their quality and validity. In addition to the description above, the main characteristics of action research can also be distilled from its terminology. The first part of the term, action implies what action researchers do. It involves becoming aware of their own actions and values, whether they are sound, and reflecting on their relationship with the social,

political, and historical context. The word research refers to data gathering and analysis, to ultimately find evidence that supports experiences and confirms the valid generation of new knowledge. Essential to this is testing, to demonstrate the application of the knowledge in practice. Therefore, 'research' also consists of communicating the gathered knowledge with others, so it may be tested.

Process

The process of action research consists of three main steps: planning, taking action and reflecting. Each step covers various activities which are discussed below. Taking action forms the core of action research and is arguably the most important step. Nevertheless, as is the case in any type of research, planning also requires thorough attention to ensure an efficient process. Furthermore, reflecting on the process and communicating results to others is crucial to understanding the importance of the acquired knowledge.

Planning

Before conducting action research, action researchers reflect on their current practice. This activity often occurs naturally in practice, even before the decision to engage in action research has been made. When an opportunity for change in a certain aspect of the practice becomes apparent to the practitioner, the desire to act on the opportunity may arise and such a decision may be the result. Then, or before, by making their motives explicit, researchers will better understand the value of conducting action research into the topic of interest.

This is, subsequently, directly relevant to the generation of a research plan. For the success of any type of research, it is important to plan ahead. This means that the scope of the research together with corresponding research questions are defined and that research activities are formulated, resources are inventoried, data collection and analysis methods are decided upon, feasibility is assessed, and trade-offs are determined.

In summary, the planning phase consists of the following activities:

- reflecting on the current practice,
- determining the aspects and motives to investigate,
- formulating a research plan: questions, methods, resources, feasibility, etc.

Taking action

When the action plan has been made, the researcher can move to action phase. Throughout this phase, data is continuously gathered, analyzed and interpreted. Both qualitative and quantitative data is useful.

Qualitative data can be gathered for example through studying field notes and reports, conducting surveys and interviews, attending presentations, and recording information shared through streaming and virtual environments. This data is particularly useful for understanding how different individuals think and act in particular settings.

Quantitative data, on the other hand, is especially useful in action research for

getting a sense of trends. It can be gathered for instance through structured observation, conducting structured surveys and interviews, and studying reports. The phase is structured as follows:

- It starts with a description and investigation of the current situation.
- The action researcher then imagines and plans a way forward, meaning a different way of acting, by creating an action plan.
- The action plan is then tested and closely monitored. The results are described and explained, as well as reflected upon in terms of validity and relevance to the scope of the research.
- If necessary, modifications are made to the original action plan, which is then tested again. This repeats until the results are valid, relevant and complete in answering all the defined research questions.

Because actions influence thinking and thinking influences action it is important to not only monitor and gather data on actions but also on thought processes. Furthermore, as mentioned, action researchers reflect on themselves in relation to others. They aim to influence others with their acting and thinking. As other people reflect critically on their own thinking and actions, they in turn influence them. Therefore, action researchers must monitor and gather data about their own thinking and actions as well as the thinking and actions of other people; how both influence each other and how interactions lead to new insights and practices. The data is then analyzed through describing and explaining the results, which includes allowing the new (test) situation to be compared to the original situation before the research was started. To do this, the data needs to be structured and presented. This can be done purely textual or, for instance, in the format of word trees and mind maps. For the presentation of quantitative data, charts are most common.

Finally, interpreting data in action research is making a judgement about the level of success of the results, i.e. the validity and relevance. This requires criteria, which are based on the researcher's values. To ground the claims, action researchers should generate evidence from the combined gathered data. All in all, the activities that the action researcher engages in during the take action phase can be summarized as follows:

- Monitoring actions/gathering data: on the original situation and new (test) situations that result from an action plan.
- Analyzing the gathered data: describing and explaining the results.
- Interpreting the data and finally generating evidence: reflecting critically on the results.

Reflection

At the end of the process, action researchers should reflect on the results of the research as a whole, specifically on the acquired knowledge and whether it has influenced personal thinking and acting, as well as whether it has inspired others. This then demonstrates the importance of the research which needs to be communicated to others. Additionally, it brings the research cycle to a close,

returning to reflecting on the (new) current practice and potentially initiating a new action research plan.

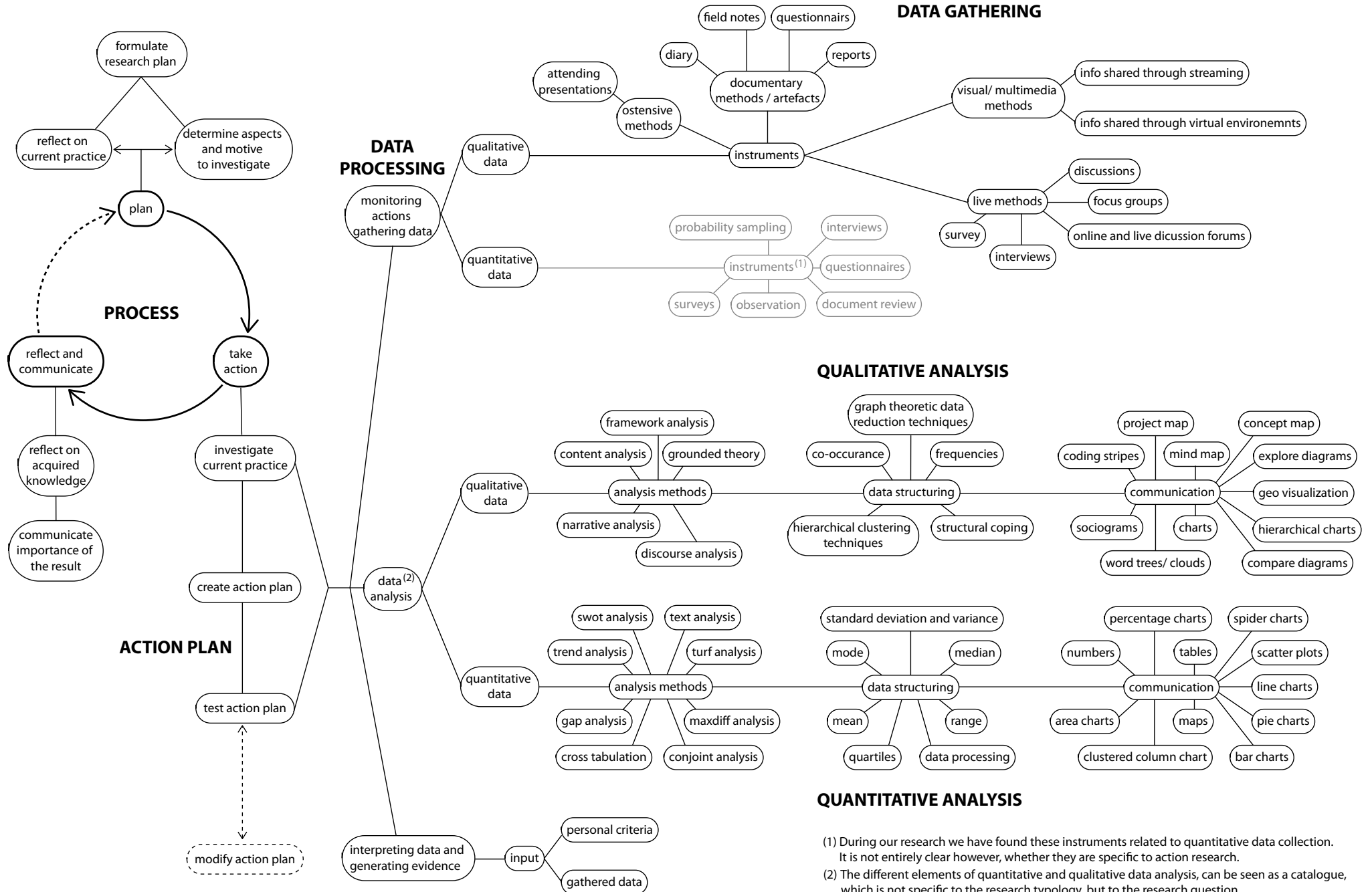
The reflecting phase thus consists of the following two activities:

- Reflecting on the influence of the research and the acquired knowledge.
- Communicating the importance of the results.

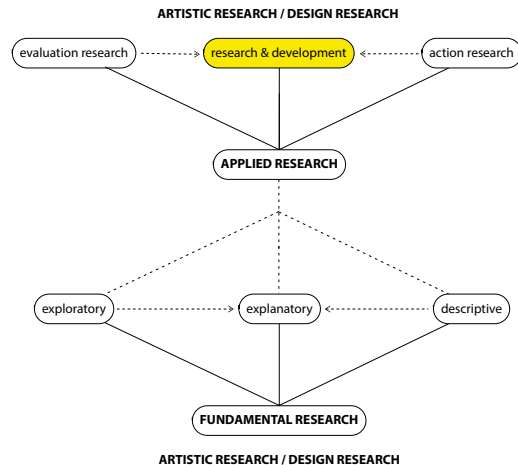
The complete text is a summary from the sources:

- Hedrick, T.E., Bickman, L., Rog, D.J. (1993). Applied Research Design: A practical Guide. SAGE Publications, Inc.
- James, E. A., Slater, T., & Bucknam, A. (2012). Action research for business, nonprofit, & public administration: A tool for complex times. SAGE Publications, Inc.
- McNiff, J. (2013). Action Research: Principles and Practice (3 ed.). Routledge.
- Mertler, C. A. (2009). Action Research: Teachers as Researchers in the Classroom. SAGE Publications, Inc.

ACTION RESEARCH



RESEARCH & DEVELOPMENT



In research and development (R&D), the main goal is the development of new and improved products and the creation of a new body of knowledge about an existing product or process. This new knowledge is then used to create new materials or entirely new products or to alter or improve existing ones.

Terms and concepts embodied in R&D include development, science, engineering, technology, and innovation. Innovation requires creativity, which is crucial to research and development.

The National Science Foundation defines three aspects of R&D, which are: basic research, applied research and (experimental) development.

- Basic research in R&D is to understand a subject matter more completely and build on the body of knowledge relating to it.
- Applied research in R&D has a more practical and direct objective and aims to determine methods to address a specific practical need or requirement.
- Experimental development exists as a follow-up to the research aspects of R&D, in which the research findings are utilized for the production of specific products including materials, systems and methods. The design and development of prototypes and processes is also part of this. Companies often spend resources on certain investigative undertakings in an effort to make discoveries that can help develop new products or work towards enhancing pre-existing products or processes.

Process

The process of R&D consists of six main steps: exploration, idea focussing, idea development/prototyping, production, launch, and reflection. The initial steps of exploration and idea focussing can be seen as the key steps in the R&D process.

Exploration is the step in which innovative ideas are created, different alternatives are weighted and reviewed, and in which the basis for the research process is formed. Idea focussing is the step in which the process or product to develop further is chosen. A crucial aspect of the R&D process is the continuous evaluation that happens throughout the steps. The whole process of R&D is presented as a diagram on page 29.

Exploration

As a first task in the research and development process it is important to outline a way to guide the research process. This step is often referred to as 'roadmapping'. There are several different methodologies and techniques to aid in the development of technology roadmaps. This step involves data gathering, diagnostic and assessment activities. This sets the focus for the process and is crucial to its success. After this initial assessment and the identification of the possibilities, the process arrives at a fundamental step, which is 'foster ideas'. This step starts with an inventorisation of possibilities, by assessing and gathering data on current circumstances, as well as regarding future goals and responsibilities. In this step a lot of ideas are generated. The discussion may start with an understanding and itemization of the issues faced in their particular industry and then narrowing down to important or core areas of opportunity or concern. This step involves generating ideas or processes, generating alternatives and weighting these different alternatives. Lastly, review and monitoring procedures are established.

This complete procedure of exploration should ideally involve experts, hands-on developers, researchers, as well as stakeholders.

In summary, the exploration phase consists of the following activities:

- Roadmapping.
- Identification of possibilities.
- Generating and weighing different alternatives.
- Establishing of monitoring and reviewing procedures.

Idea focussing

The initial pool of ideas is vast and may be generic. In this step, the research team will sift through these and locate ideas with the most potential or identify those that do not have insurmountable limitations. During this process it is important to analyse each idea critically and not become emotionally involved into one specific idea. As projects develop, they are continuously evaluated, sometimes resulting in a reconsideration of the ideas generated in earlier steps or even the cancellation of a project altogether. Its feasibility may be questioned or the research may not reveal what the business hoped for. At this point the team may also look into existing products and assess how original a new idea is and how well it can be developed. The term 'new' may cause some confusion. It does not always refer to a product or procedure that is new in an absolute sense, but also includes newness in a relative sense. There are various different classifications of new, which are:

new to the world, new to the company, additions to existing lines, improvements or revisions to existing products, repositioning and cost reduction.

Idea focussing consists of the following sub-steps: identification, evaluation, selection and review. Each project or idea is assessed and the one with the highest priority is selected. This selection is critical in the planning and control of R&D activities, because if a project is selected, it invariably implies the rejection of several others. The step can involve participation from agencies, stakeholders, project managers, and team members.

There are two main approaches to idea focussing.

- a totally holistic, subjective, and intuitive judgmental approach. This approach is heavily dependent on the intuitive capabilities of the R&D manager and is subject to their character and preconceived notions.
- a deductive analytical approach. This approach needs extensive data, and the decisions are based on the accuracy of the data available.

The methods used are:

- The economic rating method, which is based on the expected performance as evaluated by some economic indicators. The ranking, voting or scoring method is based on evaluation procedures using qualitative judgment and rating.
- The risk analysis approach, that considers the R&D project progress as a trade-off between risk and costs.
- The decision analysis approach, that uses rational evaluation of information on alternative courses of action associated with various outcomes. This last approach can be subdivided further into a comparative and a mathematical approach.
- Another frequently used technique in project selection is expert consultation. This refers to using expert knowledge from one or more sources to make a decision. The instruments that can be used to gather such knowledge are, for instance, individual consultation, interviews, surveys or panel group discussions.

Depending on the method used for project selection, qualitative and quantitative data are analysed. Analysis and data structuring methods can vary, based on whether the data to analyse is qualitative or quantitative in nature.

As mentioned above, the idea focussing can follow either a holistic/subjective approach or a deductive/analytical approach. The analytical approach consists of the following activities:

- Choosing a method of project selection.
- Analysing the gathered data.
- Data structuring.
- Communication of the findings.

Idea development/prototyping

Previously identified projects and ideas are selected and developed further in this phase, where feasibility and relevance are tested thoroughly. This happens at a social-economic level as well as a practical level through prototyping. Researchers may work closely with product developers to understand and agree on how an idea may be turned into a practical product.

Production

When an idea, through thorough testing, is considered feasible and relevant, it may move into production. Regularity aspects are assessed and other necessary activities are carried out to meet all the criteria for approval and eventually launch of the final product.

Launch

The product, that has been given shape through an extensive process of research and development, is introduced to the market.

Reflection

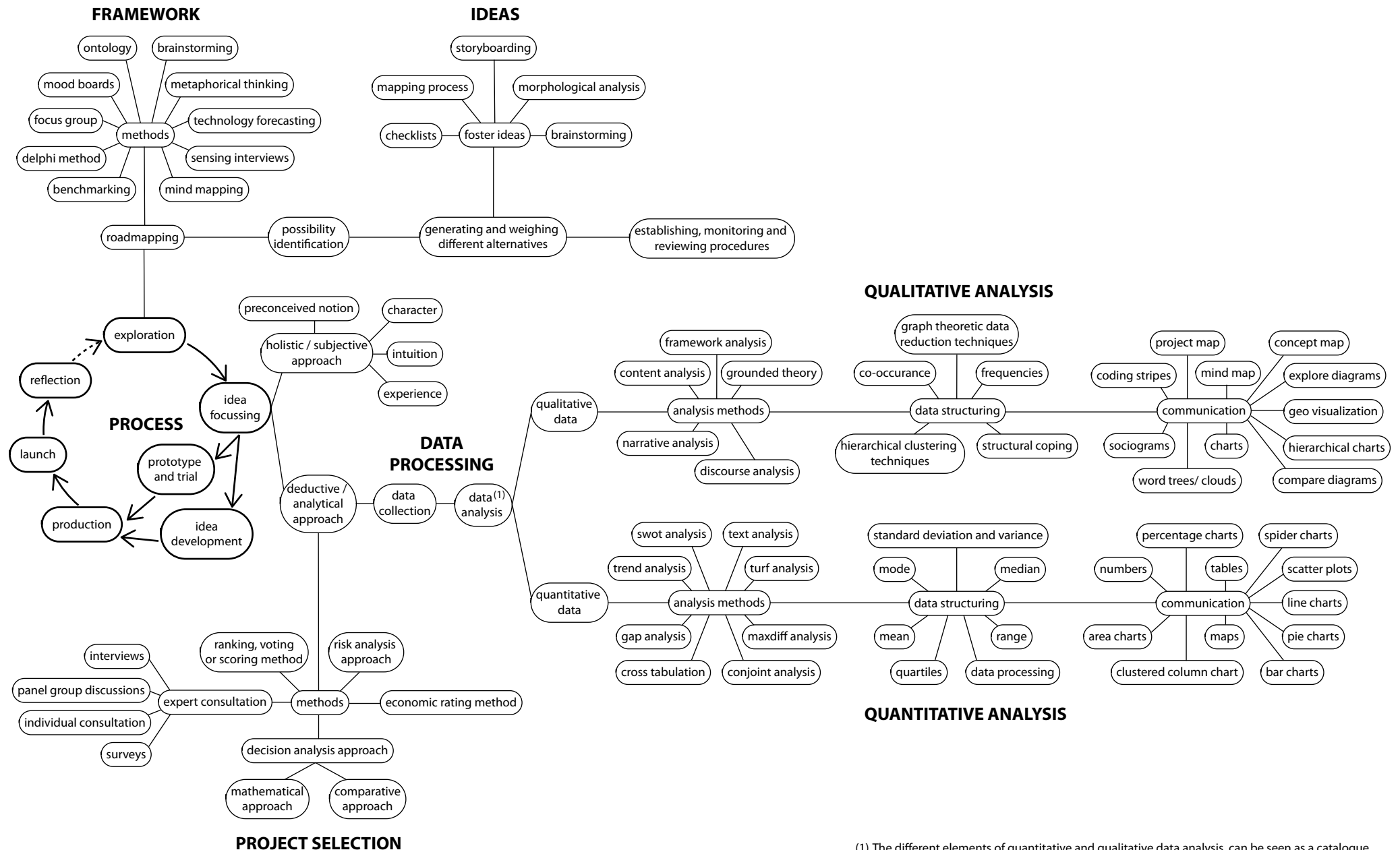
Evaluation and reflection processes are integral parts in the R&D process. Through reflection, the resulting final product is compared to the original goal and whether its relevance is indeed as predicted. The reflection will often lead to a re-entering into the research and development process, in order to improve the product or start a completely new project based on new knowledge.

The complete text is a summary from the sources:

- Akhilesh, K. B. (2014). R&D Management (1st ed). Springer
- Kenton, W. (2020, July 5) Research and Development (R&D). Retrieved from <https://www.investopedia.com/terms/r/randd.asp#:~:text=Research>
- Luenendonk, M. (2019, September 18). Research and Development (R&D) Overview and Process. Retrieved from <https://www.cleverism.com/rd-research-and-development-overview-process/>

RESEARCH & DEVELOPMENT

diagram



(1) The different elements of quantitative and qualitative data analysis, can be seen as a catalogue, which is not specific to the research typology, but to the research question.

TOOL FOR APPLIED RESEARCH

TOOL FOR APPLIED RESEARCH METHODS

ASSIGNMENT	DESIGN PRACTICE + POSITIONING										EXPOSURE	REFLECTION						
	framework		approach		data gathering		data analysis		data structuring	concluding	communicating							
activities	activities	tools	activities	tools	activities	tools	activities	tools	tools	activities	activities	tools	activities					
						<div>hypothesis testing</div> <div>experimental design</div> <div>objective quantitative measurement</div> <div>highly structured questionnaire</div> <div>interview shedule</div> <div>observation</div> <div>document review</div> <div>probability sampling</div> <div>interview</div> <div>questionnaire</div> <div>survey</div>					<div>percentage chart</div> <div>spider chart</div> <div>table</div> <div>scatter plot</div> <div>number</div> <div>line chart</div> <div>area chart</div> <div>pie chart</div> <div>clustered column chart</div> <div>bar chart</div> <div>map</div>							
		<div>logic model</div> <div>delphi method</div> <div>brainstorming</div> <div>mapping process</div> <div>mood board</div> <div>mind mapping</div> <div>metaphorical thinking</div> <div>storyboarding</div> <div>morphological analysis</div> <div>technology forecasting</div> <div>checklist</div> <div>sensing interview</div> <div>benchmarking</div> <div>focus group</div> <div>ontology</div>		<div>preconceived notion</div> <div>character</div> <div>intuition</div> <div>experience</div> <div>ranking, voting or scoring method</div> <div>risk analysis approach</div> <div>economic rating method</div> <div>mathematical approach</div> <div>comparative approach</div> <div>interview</div> <div>panel group discussion</div> <div>expert consultation</div> <div>survey</div>		<div>data collection and monitoring</div> <div>prototype and trial</div> <div>idea development</div> <div>monitoring actions</div>	<div>quantitative</div> <div>qualitative</div>				<div>selection of the right findings</div>	<div>framework analysis</div> <div>content analysis</div> <div>grounded theory</div> <div>narrative analysis</div> <div>discourse analysis</div>	<div>median</div> <div>mode</div> <div>range</div> <div>mean</div> <div>quartile</div> <div>standard deviation and variance</div> <div>data processing</div> <div>co-occurrence</div> <div>frequency</div> <div>structural coping</div> <div>hierarchical clustering technique</div> <div>graph theoretic data reduction technique</div>	<div>interpreting data</div> <div>gathering evidence</div>	<div>communicate importance of the result</div> <div>launch</div>	<div>quantitative</div> <div>qualitative</div>	<div>chart</div> <div>concept ap</div> <div>project map</div> <div>mind map</div> <div>explore diagram</div> <div>coding stripe</div> <div>geo visualization</div> <div>sociogram</div> <div>hierarchical chart</div> <div>word cloud</div> <div>word tree</div> <div>compare diagram</div>	<div>create follow up plan</div> <div>review recommendations</div> <div>reflect on aquired knowledge</div>
<div>project brief</div> <div>reflect on current practice</div>	<div>determine aspects and motives to investigate</div>																	
<div>MANUAL</div> <div>In order to analyse the previous applied research typologies, we have looked at their components ⁽¹⁾ and structure ⁽²⁾.</div> <div>#1. The components (activities and tools) are the building stones of research typologies that can be distinguished apart from each other and that are productive by themselves.</div> <div>#2. The structure is made of the connections between all components; the process steps along which the research is deployed (on display on previous pages).</div> <div>Both are combined in this matrix that organizes the process steps horizontally from left to right and the various components vertically.</div> <div>By selecting and connecting components, we can draw a multitude of possible 'critical paths' from left to right. This way we can use the building stones of recognized research typologies to build our own research profile. A research profile can be tuned to serve a specific study, an individual practice or an assignment. It can be supportive in generating interdisciplinary educational formats</div>																		
<div>or projects at a larger educational scale as well.</div> <div>Ahead of the start of research phase, activities and tools that would fit the project can be marked, like in the example on p64. The items together can then be seen in coherence and will show the path through the process. Every possible path is critical and navigates through a specific creative process towards a specific creative work.</div> <div>It also is possible to fill out activities and/or tools that are not yet in the matrix. These could be personal items that have proven to be successful. Apart from creating a specific method, the matrix opens up options for activities and tools that are new to the designer. If items are not clear, these can be looked up in the glossary on the next two pages.</div> <div>After the glossary, an analysis of interviews at FHK Master Studies delivers more components for the matrix that in the end delivers the FHK Tool for Applied Research Methods on p63.</div>																		
<div>key</div> <div>activities</div> <div>tools</div>																		

TOOL FOR APPLIED RESEARCH

Assignment

PROJECT BRIEF the research is initiated by an assignment or project brief that steers the research into a certain direction.

Design practice and positioning

Framework

LOGIC MODEL graphic depiction of relationship between the program's activities and its intended effects,

DELPHI METHOD a process used to arrive at a group's opinion or decision by surveying a panel of experts,

BRAINSTORMING a group creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its members,

MAPPING PROCESS a planning and management tool that visually describes the flow of a process, the way it flows and its effectivity,

MOOD BOARD a visual presentation consisting of images, text, and samples of objects in a composition,

MIND MAPPING a hierarchical diagram used to visually organize information, showing the relationships among components of the whole,

METAPHORICAL THINKING a substitutional mental process in which implicit comparisons are made between qualities of objects that are usually considered in separate classifications,

STORYBOARDING graphically organizing illustrations and/or images displayed in sequence for the purpose of pre-visualizing an idea,

MORPHOLOGICAL ANALYSIS visually recording a morphological overview, exploring all possible solutions to a complex problem and providing a structured inventory of possible solutions,

TECHNOLOGY FORECASTING attempts to predict the future characteristics of useful technological machines, procedures or techniques, in order to make smart decisions,

CHECKLIST list of items, as names or tasks, for comparison, verification, or other checking purposes

SENSING INTERVIEW tool to explore a situation, its people and dynamics,

BENCHMARKING process of comparing strategies, processes, performances and/or other entities against practices of the same nature, under the same circumstances and with similar measures,

FOCUS GROUP group interview involving a small number of demographically similar people,

ONTOLOGY considering the components of data and using these as the basis for structuring the data,

Approach

PRECONCEIVED NOTION an opinion formed beforehand without adequate evidence,

CHARACTER the mental and moral qualities distinctive to an individual,

INTUITION the ability to understand something instinctively, without the need for conscious reasoning,

EXPERIENCE refers to the past events, knowledge, and feelings that make up someone's life, describes the knowledge or skill in a particular situation or activity,

RANKING, VOTING OR SCORING METHOD all the different alternatives or ideas are ranked, voted or scored,

RISK ANALYSIS APPROACH approach that identifies possible threats and the likelihood that these materialize, therefore helping to identify and manage potential problems,

ECONOMIC RATING METHOD a selection procedure based on the expected performance as evaluated by certain economic indicators,

MATHEMATICAL APPROACH approach in which a system deploys mathematical concepts and language. It describes a system by a set of variables and a set of equations that establish relationships between the variables,

COMPARATIVE APPROACH act of comparing two or more items with a view to discovering something about one or all of the items being compared,

INTERVIEW structured conversation where one participant asks questions, and the other provides answers,

PANEL GROUP DISCUSSION a group of people gathered to discuss a topic in front of an audience,

EXPERT CONSULTATION a meeting with an expert in order to seek advice,

SURVEY list of questions aimed at extracting specific data from a particular group of people,

Data gathering

HYPOTHESIS TESTING act of assessing the plausibility of a hypothesis by using sample data,

EXPERIMENTAL DESIGN method of research in which a controlled experimental factor is subjected to special treatment for purposes of comparison with a factor kept constant,

OBJECTIVE QUANTITATIVE MEASUREMENT gathering of data or information that can be definitively defined and defended by putting a value to something,

HIGLY STRUCTURED QUESTIONNAIRE document that consists of a set of standardized questions with a fixed scheme that specifies the exact wording and order of the questions,

INTERVIEW SCHEDULE list containing a set of structured questions, to serve as a guide for interviewers, researchers and investigators in collecting information or data about a specific topic,

OBSERVATION action or process of closely observing or monitoring something or someone,

DOCUMENT REVIEW way of collecting data by reviewing existing documents,

PROBABILITY SAMPLING sampling technique in which the researcher chooses samples from a larger population, using a method based on the theory of probability,

INTERVIEW structured conversation where one participant asks questions, and the other provides answers,

SURVEY list of questions aimed at extracting specific data from a particular group of people,

DISCUSSION action or process of talking about something in order to reach a decision or to exchange ideas,

SURVEY list of questions aimed at extracting specific data from a particular group of people

CASE STUDY process or record of research into the development of a particular person, group, or situation over a period of time,

OPEN QUESTIONNAIRE document that consists of a set of open ended questions, that allow people to express what they think in their own words,

FOCUS GROUP group interview involving a small number of demographically similar people,

IN DEPTH INTERVIEW type of interview that offers the opportunity to capture rich, descriptive data about how people think and behave, including unfolding complex processes,

COMPLETE PARTICIPANT OBSERVATION type of observation where the researcher fully engages with the participants and partakes in their activities. Participants are unaware of the observation and the research being conducted,

PARTICIPANT AS OBSERVER type of observation where the researcher is fully engaged with the participants, who are aware of the observation process and the identity of the researcher,

OBSERVER AS PARTICIPANT type of observation where the participants are aware of the researcher, while contact between them is limited,

COMPLETE OBSERVER detached type of observation, where the researcher is neither seen nor noticed by participants

QUESTIONNAIRE set of printed or written questions with a choice of answers, devised for the purposes of a survey or statistical study,

FIELD NOTES qualitative notes recorded by scientists or researchers in the course of field research, during or after their observation of a specific phenomenon,

REPORT account of a particular matter in the form of an official document after thorough investigation or consideration by an appointed person,

PRESENTATION speech or talk in which a new product, idea, or piece of work is displayed and explained to an audience,

INFO SHARED IN VIRTUAL ENVIRONMENTS information shared through email, chat and /or web-

TOOL FOR APPLIED RESEARCH

based document sharing applications,

INFO SHARED THROUGH STREAMING IN ONLINE AND LIVE DISCUSSION FORUMS online or live forums where people can hold a discussion about a certain topic,

DIARY daily record of events and experiences,

Data analysis

SWOT ANALYSIS strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to a project,

TEXT ANALYSIS process of analysis of text data using statistical procedures,

TURF ANALYSIS statistical research methodology that enables the assessment of potential market reach for a combination of products and services,

TREND ANALYSIS statistical procedure performed to evaluate hypothesized linear and nonlinear relationships between two quantitative variables,

GAP ANALYSIS method of assessing the differences between the actual performance and expected performance in an organization,

MAXDIFF. ANALYSIS analytical approach, also known as the best-worst scaling, used to gauge survey respondents preference score for different items,

CROSS TABULATION quantitative research method appropriate for analyzing the relationship between two or more variables in which the data is recorded in a table or matrix,

CONJOINT ANALYSIS survey-based advanced market research analysis method that attempts to understand how people make complex choices,

FRAMEWORK ANALYSIS type of analysis in which data is sifted, charted and sorted in accordance with key issues and themes,

CONTENT ANALYSIS a research tool used to determine the presence of certain words, themes, or concepts within some given qualitative data, for example in documents,

GROUNDING THEORY hypotheses and theories are constructed through the collection and analysis of data,

NARRATIVE ANALYSIS a cluster of analytic methods for interpreting texts or visual data that have a storied form. A common assumption of narrative methods is that people tell stories to help organize and make sense of their lives and their storied accounts are functional and purposeful,

DISCOURSE ANALYSIS the study of social life, understood through analysis of language in its widest sense including face-to-face talk, non-verbal interaction, images, symbols and documents,

Data structuring

MEDIAN value separating the higher half from the lower half of a data sample, a population, or a probability distribution,

MODE value that appears most often in a set of data values,

RANGE area of variation between upper and lower limits on a particular scale,

MEAN the average or the most common value in a collection of numbers,

QUARTILE measure of the spread of values above and below the mean by dividing the distribution into four groups,

STANDARD DEVIATION AND VARIANCE standard deviation looks at how spread out a group of numbers is from the mean, by looking at the square root of the variance. The variance measures the average degree to which each point differs from the mean, the average of all data points,

DATA PROCESSING a method to input, retrieve, verify, store, organize, analyze or interpret a large set of data, mostly done by software,

CO-OCCURRENCE the fact of two or more things occurring together or simultaneously,

FREQUENCY frequency of a particular observation is the number of times the observation occurs in the data,

STRUCTURAL COPING -

HIERARCHICAL CLUSTERING TECHNIQUE an algorithm that groups similar objects into clusters,

GRAPH THEORETIC DATA REDUCTION TECHNIQUES -

Exposure

Communicating

PERCENTAGE CHART a diagram that exhibits a simple analysis of statistical data in terms of percentages,

SPIDER CHART a graphical method of displaying multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on axes starting from the same point,

TABLE a set of facts or figures systematically displayed, usually in columns,

SCATTER PLOT a graph in which the values of two variables are plotted along two axes, the pattern of the resulting points revealing any present correlation,

NUMBER a mathematical object used to count, measure, and label,

LINE CHART a type of chart that displays information as a series of data points called 'markers', connected by straight line segments,

AREA CHART a graphical representation useful for visualizing how one or more quantities can change over time, by plotting values or data points over a two-dimensional Cartesian system and joining the points with a line segment,

PIE CHART a type of graph in which a circle is divided into sectors that each represent a proportion of the whole,

CLUSTERED COLUMN CHART type of chart that displays more than one data series in clustered vertical columns,

BAR CHART a diagram in which the numerical values of variables are represented by the height or length of lines or rectangles of equal width,

MAP a way of displaying statistical data in connection to geographical information,

CHART a sheet of information in the form of a table, graph, or diagram,

CONCEPT MAP a diagram that depicts suggested relationships between concepts,

PROJECT MAP tool, made of shapes that represent the items of the project with connectors that show links between them, to visually exploring or present the project data,

MIND MAP a diagram in which information is represented visually, usually with a central idea placed in the center and associated ideas arranged around,

EXPLORE DIAGRAM type of diagram that focuses on a single project item, showing all of the items connected to it,

CODING STRIPE colored bar displayed alongside source or node content that allow you to see how the content is coded,

GEO VISUALIZATION type of visualization that deals solely with displaying information that has a geospatial component, i.e geographic or positioning information,

SOCIOGRAM a tool for charting the relationships within a group, representing the social links and preferences that each person has,

HIERARCHICAL CHART a tool used to portray the elements of a system, organization or concept explaining the relationship between them,

WORD CLOUD a visual representation of a set of words depicted in different sizes, the bigger and bolder the word the more important it is,

WORD TREE a visual representation of a set of words, with a branching structure demonstrating the words 'interrelationships in which important words are depicted with larger or bolder font,

COMPARE DIAGRAM type of diagram, in which a comparison is made between two or more objects, phenomena or groups of data.

INTERVIEWS

QUESTIONNAIRE INTERVIEWS

GENERAL QUESTIONS

1. Can you describe how typical creative design processes at this master study are organized?
2. What are the typical steps that you/your students take during creative design processes within this master study? When/where in these processes is research usually implemented?
3. What kinds of research methods are taught and practiced at your academy?
4. Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do you/your students implement applied research as part of your/their creative design processes? If so, to what extent do you/your students use the findings of applied research in their projects?
5. From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

RESEARCH+DESIGN PROCESS

Framework

6. How do you/your students start up a project in terms of research and what steps do you/they take to arrive at a certain mindset, a tuning of the brain that allows you/them to best cope with the assignment?
7. To what extent does the mindset change during the process and because of what?

Approach

8. Are there any planning activities you/your students engage in before starting your/their research process?
9. Do you/your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to you/your students? If so, what aspects are most crucial to a strong research plan and why?

Data gathering

10. Which methods of data gathering are you familiar with?
11. Which methods do you/your students use most often, and is that pre-determined or variable?
In case of a preference for certain pre-determined or fixed methods; what do you think motivates your/their personal preference?
In case of variable methods, what informed the choice of method? Can you give an example?

Data analysis/Selection of findings

12. What do you think makes a 'good finding' in applied research?
13. How do you/your students select the good findings from all your/their research findings?
14. Can you think of ways to reach good findings more directly?

Implementation of findings

15. To what extent do you think that research findings can alter your/your students' position

towards the assignment? Can you give an example?

16. In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?
17. How do you/your students implement the findings in the creative process? Are there any specific approaches to doing so?

Improvement of research process and tool

18. Having now discussed your/your students' average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?
19. If you/your students would be given a library of applied research tools and activities, to what extent do you think it would help to construct your/their own, improved research method?
20. Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

INTERDISCIPLINARITY

21. Do you/your students participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?
22. Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?
23. Do you think that applied research can be a driver in interdisciplinary processes and projects?
24. In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?
25. Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

note

- All interviews have taken place online because of the Covid pandemic.
- Interviewees were given specific pages of the paper ahead of the interview: p.5 research questions, p.7-8 from research to design, p.13 research typologies and p.31 tool for applied research.

INTERVIEW MASTER OF ARCH + URB

Interview Martijn Honselaar
1st year tutor @ Master of Arch + Master of Urb

General questions

1) Can you describe how typical creative design processes at this master study are organized?

It varies and is highly influenced by the assignment. Different triggers create different creative design processes. During the first year students are being deprogramized in order to create an open mind.

2) What are the typical steps that your students take during creative design processes within this master study? When/where in these processes is research usually implemented?

Initial research into site and social component. More research is conducted all throughout the design process; first broad and then narrowed down. Design is research, in a continuous loop and continuous reflection mode, only closed by the deadline.

3) What kinds of research methods are taught and practiced at your academy?

Not part of the program in the first year.

4) Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do your students implement applied research as part of your/their creative design processes? If so, to what extent do your students use the findings of applied research in their projects?

Research is easy and reflection is complex for the students. It is important for them to realize what their position is. Students need help to find key issues through questioning, for example by translating text into drawings. First year students need help with implementation.

5) From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

Translating by means of sketching and drawing is crucial to deliver successful results.

Research+design process

Framework

6) How do your students start up a project in terms of research and what steps do they take to arrive at a certain mindset, a tuning of the brain that allows them to best cope with the assignment?

In the first place online research and library research, after that building up of a loose narrative, which in itself is design.

7) To what extent does the mindset change during the process and because of what?

The mindset changes because a good narrative tells student what to do and which direction to go, even if students are not conscious about it. That way students learn to rely upon their intuition and this causes a growth in self-confidence.

Approach

8) Are there any planning activities your students engage in before starting their research process?

No, students dive right in. Projects cover eight weeks and in the second or third week they are sometimes still exploring.

9) Do your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to your students?

It is good to have a strategy, focus and reflection in order to narrow down the research field before the start.

Data Gathering

10/11) Which methods of data gathering are you familiar with? Which methods do your students

use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates their personal preference? In case of variable methods, what informed the choice of method? Can you give an example?

Mostly online research, which gives a huge amount of non-critical information. Mostly there is a lack of critical reflection with the students and that way the information stays descriptive and not interpretative.

Data analysis/selection of findings

12) What do you think makes a 'good finding' in applied research?

A good finding propels you forward, it lines up with the narrative.

13) How do your students select the good findings from all their research findings?

The narrative is a selection tool, only to see the findings that add up to it.

14) Can you think of ways to reach good findings more directly?

Students need to learn to narrow down directions, need to become confident with choosing findings through experience, going through the selection process again and again. Learn to quickly develop a loose narrative.

Implementation of findings

15) To what extent do you think that research findings can alter your students' position towards the assignment? Can you give an example?

That depends on the student. To alter the own position, the findings should relate to the narrative and sometimes offer a new perspective. For example, a student with a car driven project that adored a project by BIG, discovered a new perspective by making the car part of the house and this propelled the design.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

Conscious means classic research. Subconscious means background, culture and personal experience. Drawings go to the subconscious level, the pencil translates directly from mind to paper.

17) How do your students implement the findings in the creative process? Are there any specific approaches to doing so?

The approach is a picture description. It is chosen to make the students reflect together to propel the designs forward. Translation and reflection deliver a value system to possible implementations.

Improvement of research process and tool

18) Having now discussed your students' average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

Focus on narrative and reflection, more like laboratories instead of studios that usually focus onto one aspect. Anything is acceptable. More testing with trial and error.

19) If your students would be given a library of applied research tools and activities, to what extent do you think it would help to construct their own, improved research method?

Maybe comfortable, like a life vest. But it would probably be too soon in the first year, because the students haven't developed their own opinions yet. It is too much, too structured, and it blocks development.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

First year students are not yet into applied research.

Interdisciplinarity

21) Do your students participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

Yes, in combination with the Academy of Dance.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

I only know of the project of architecture and dance. Interdisciplinary is not yet successful, as there is a hierarchical structure and architecture and dance not at the same table from the start. During the process the architects made the design and the dancers had to move in and around it.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Applied research might not work, because it is too early for the first year. But taking a standpoint can be a driver as there has to be balance between standpoints of people involved. In the example the dancers should be involved in the design process as well, without hierarchy. The main limit for an interdisciplinary process is the available time, it reduces the time to discuss, to digest info, to get to know other disciplines.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

No examples.

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

More time and get acquainted with the own design process. An improved interdisciplinary process structure at MAU has to be streamlined in order to think ahead in the same way.

note: this interview was with Martijn Honselaar, as a first-year tutor, and it deviates from the interviews at other Master Studies. It was very helpful because we started the series of interviews here and we tried to discover if a baseline interview per master study would help us. It turned out that students in the first year of their master study are not yet sufficiently trained in research in order to be able to draw conclusions on research methods. From this point on we decided to continue interviewing tutors and alumni that are, and have been, involved in graduate years.

INTERVIEW MASTER OF ARCH + URB

Interview summary Pieter Feenstra / JW van Kuilenburg
graduate tutors @ Master of Arch + Master of Urb

General questions

1) Can you describe how typical creative design processes at this master study are organized?

It starts with a design brief, defined by the student. Given planning is divided into several phases. Individual and group work are both possible. It is organized to improve self-learning and learning from each other.

2) What are the typical steps that your students take during creative design processes within this master study? When/where in these processes is research usually implemented?

There were predetermined steps: project specifications, research, concepts, pre design, definitive design, exam. Research happens as a separate phase as well as throughout all other phases.

3) What kinds of research methods are taught and practiced at your academy?

Taught methods are unobtainable. Usually students apply shallow research methods into online sources and documented visual information. Other methods are unknown to students. No specific methods, anything can happen in the studio.

4) Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do your students implement applied research as part of your/their creative design processes? If so, to what extent do your students use the findings of applied research in their projects?

Applied research is implemented, but not in a standard way, because gathering empirical evidence requires getting out of the studio, out of the student's comfort zone. Thin research is just descriptive and does not lead to interpretative conclusions.

5) From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

This is difficult and usually there are unsuccessful attempts because of a lack of practice and a lack of understanding what research can deliver. It is not seen as fundamental to the process by the students yet. There is no direct relationship between design and results of research and this slows down the process. But potentially it is rewarding, because it widens the scope and foundations while it tests the project specifications.

Research+design process

Framework

6) How do your students start up a project in terms of research and what steps do they take to arrive at a certain mindset, a tuning of the brain that allows them to best cope with the assignment?

The position is informed by the brief and the non-frozen hypothesis. Usually they inform themselves by large quantities of data through internet research. Later they have expert interviews, stakeholder involvement, analysis of reference projects, and publications.

7) To what extent does the mindset change during the process and because of what?

The position changes because of the integration of findings, testing, sketching, modeling and reflection. It is required to not remain neutral and to discover personal qualities instead.

Approach

8) Are there any planning activities your students engage in before starting their research process?

By making the project specs, students plot ahead their research and their design. It consists of questioning themselves, what subjects, what methods, analysing site and context, studying references etc. The project specs have fourteen predetermined elements. Usually it is

desktop research. The weakest point is that students are not used to start by themselves.

9) Do your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to your students?

It is part of the project specs. Compactness, completeness, proof of good project and instruments are crucial. It is productive, insightful and it speeds up the process.

Data Gathering

10) Which methods of data gathering are you familiar with?

First impressions, interpretations, desktop research, expert consultation, reading books, analysis of reference projects, graphs and diagrams, statistic information, site analysis, programmatic exploration, technical and sustainable exploration and social, historic and programmatic information.

11) Which methods do your students use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates their personal preference? In case of variable methods, what informed the choice of method? Can you give an example?

Shallow 'first page on Google' desktop research, graphs, diagrams and generating icons are used most often. It is not variable, not pre-determined, but coincidental instead. This preference comes from quick accessibility and familiarity with these shallow techniques.

Data analysis/selection of findings

12) What do you think makes a 'good finding' in applied research?

A good finding is clear, is related to the main question, is useful, is explanatory, delivers added value together with other findings, clearly shows direction and pushes forward. It can be a negative finding, to understand in which direction not to go and also this can open new perspectives.

13) How do your students select the good findings from all their research findings?

Very basic; most evident and most obvious seem the best.

14) Can you think of ways to reach good findings more directly?

Rely on subjectivity through intuition (based on knowledge) and use logic (tested through sketching, writing and modeling). Learn to quickly give weight to certain findings and apply an informed and more radical approach.

Implementation of findings

15) To what extent do you think that research findings can alter your students' position towards the assignment? Can you give an example?

It always happens, as the design process is ever evolving. It can be triggered for instance by experts or by reference projects. It delivers an informed way of looking at the assignment.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

Both are used to process, but not in sync yet. An intuition that is not in sync with conscious processing will deliver a designers block. Students usually rely on conscious processing over intuition and their interpretation often proves to be too literal, too direct.

17) How do your students implement the findings in the creative process? Are there any specific approaches to doing so?

Drawing, documentation and display. These can make the real characteristics of the project

apparent and make evident what will and what will not work. Testing is important in all stages of the design process, also in the selection of findings.

Improvement of research process and tool

18) Having now discussed your students' average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

Focus more on building a theory (testing and position). Focus more on reflection. Teach techniques to quickly weigh and select the findings.

19) If your students would be given a library of applied research tools and activities, to what extent do you think it would help to construct their own, improved research method?

It will possibly be beneficial because lack of knowledge transfers itself in education. It can be a wayfinder between projects specs and research, but can be overwhelming in quantity as well. Examples and explanations would help to transform fear into confidence. Personal preference is fine as long as it relates to the project specs.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

Two cooperating urban students, researching a new type of urbanism. They built a theory, came up with a strategy, tested their strategy with stakeholders and designed accordingly. Unique and relevant data were structuring the presentation techniques. It had a high level of consistency and delivered new insights to the students and to the professional field as well.

Interdisciplinarity

21) Do your students participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

Three projects: a dance project, a landscape project, and an excursion project in South-Africa.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

The excursion project in South-Africa was the best. Crucial to interdisciplinarity is real involvement, merging of disciplines and not one dominant discipline making the design decisions. The assignment requires full involvement of the participating disciplines. All disciplines mentioned in the research hypothesis have to understand the design process. The production of authentic material is input for discussion. Discussions should be on a level playfield. There should be sufficient time for preparation and team-building; it is all-in or all-out. The project is a fail if the result is unsatisfactory to one or more participants, .

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

....

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

Example of filmmakers and authors, with a book as pre-research in an interdisciplinary design process.

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

Attempts in the right direction with for instance action research. Confidence in possibilities

for real cooperation. The tool matrix could help, to find a common path.

note: J.W. van Kuilenburg, author, was involved in this interview as well. To avoid bias, the interview was held the same way as the others, strictly according to the questionnaire by interviewers Ramona Ilmer and Yannick Schop.

INTERVIEW MASTER OF ARCH + URB

Interview summary Nicky Kouwenberg
alumnus @ Master of Arch

General questions

1) Can you describe how typical creative design processes at this master study are organized?

Graduate year was a clear process from the beginning on. Deadlines, including the minimum of deliverables for presentations, were predefined.

2) What are the typical steps that you take during creative design processes within this master study? When/where in these processes is research usually implemented?

The design process has loops and the student goes through these several times. Research is in a continuous loop as well, stopped by the deadline.

3/4) What kinds of research methods are taught and practiced at your academy? Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do you implement applied research as part of your creative design processes? If so, to what extent do you use the findings of applied research in your projects?

Design Thinking is research towards design. Different methods are encouraged; for example the making of concept models, but also technical drawings. The research process with research methods and design is different for every student.

5) From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

Yes, applied research helps to discover things you previously didn't know and it can open new doors; not only proving things but also discovering issues. My design for example had a nature experiment with 1000 caterpillars that started to weave in certain ways, steered by the right vibrations. Applied research doesn't necessarily impact design literally but can give different perspectives.

Research+design process

Framework

6) How do you start up a project in terms of research and what steps do you take to arrive at a certain mindset, a tuning of the brain that allows you to best cope with the assignment?

My starting mindset is to only do things that are fun, by exploring into different new and interesting areas, then build up a case with information to prove. This helps to decide in which direction to go.

7) To what extent does the mindset change during the process and because of what?

Change of mindset is caused by critical reflection and critical input, for example by the Academy tutors and the extracurricular tutor. Critical feedback also initiates loops with reflection. It is important to always stay critical towards yourself and your process.

Approach

8) Are there any planning activities you engage in before starting your research process?

Yes, students have to present their initial project specs, literature list, extracurricular mentor, guest critics, initial program, context, etc. This really helps in the design process of the student.

9) Do you generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to you? If so, what aspects are most crucial to a strong research plan and why?

The research plan is part of project specs. For each new phase of design clear criteria explain what the student needs to present. The clear syllabus is helpful, something to hold onto.

Data Gathering

10) Which methods of data gathering are you familiar with?

I used wide variety of data gathering methods: observation (walking through dunes, trips to oil rigs), interviews (municipality, nature foundation, heritage council, fishermen), material experimentation (deterioration of materials in on-site conditions), reading books, site analysis, testing, research through design, sketches, 3d modelling.

11) Which methods do you use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates your personal preference? In case of variable methods, what informed the choice of method? Can you give an example?

The layering of different data gathering methods is key. Collecting input from different people and experts and escape from the studio, in order to explore.

Data analysis/selection of findings

12) What do you think makes a 'good finding' in applied research?

Good findings give you information that you couldn't imagine when you started. To prove anything is easy, to surprise yourself is complex.

13) How do you select the good findings from all your research findings?

By documenting the research and findings, through methods that work for me personally, then translate these into follies, essays, models, text, etc.

14) Can you think of ways to reach good findings more directly?

...

Implementation of findings

15) To what extent do you think that research findings can alter your position towards the assignment? Can you give an example?

The position towards the assignment is changed by opening new doors. Also with proof that a project doesn't work; information you wish you didn't find. Then you need to go back in the process and find something new, reposition yourself. In my case it were the buried bunkers in the dunes, that I didn't know about at the beginning. Later on they became of major importance in my project.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

Consciousness versus subconsciousness is specific to the project. It is not so clear during the process, the students are not always aware of what they are doing subconsciously. But with time, through retrospection, subconscious can become conscious. Also through critical assessments by tutors and others.

17) How do you implement the findings in the creative process? Are there any specific approaches to doing so?

To implement findings in the creative process there are various methods. By getting to know the own project, by judging whether findings fit in, by connecting the dots, conditions, to create potential and by model making. The most important is the layering of different approaches, not to just rely on one.

Improvement of research process and tool

18) Having now discussed your average research processes (and some examples), would you

change the way you do/teach research in the future? If so, what would you approach differently and why?

I wouldn't change anything, I would love to go through that journey again.

19) If you would be given a library of applied research tools and activities, to what extent do you think it would help to construct your own, improved research method?

A library of tools would be useful in order to know what research methods are available and it could encourage students to try new techniques. Maybe there could be dedicated moments during the master studies to spend some time trying out the different tools and activities. It is essential to know yourself and find the right method for yourself. For example in case of dyslexia, writing texts is not so good and it might be better to make models.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

The project by Nick, a refinery at sea that harvests brass from dumped military ammunition. He thoroughly tested different materials on site under specific weather conditions. He discovered how materials would change over time and he visited a brass instrument manufacturer as well.

Interdisciplinarity

21) Did you participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

I am aware of the project between dance and architecture in the first year, but I did not participate. Within Architecture Academy students do not even work together with urban designers, so there is something to improve.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

The best example of interdisciplinary work that I know is Atmosphere by Peter Zumthor. For architecture it is potentially interesting to implement other senses, not just the visual one. Interdisciplinarity brings together different disciplines, it is about inspiring and learning from each other.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Applied research is a huge driver. Learning about new subjects outside of own field, for example in the field of biology and specifically in my case the behaviour of caterpillars.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

...

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

...

note: Nicky Kouwenberg was selected because of his authentic research and design process. He graduated during the academic year 2015-2016. In the meantime MAU developed its curriculum further with education and training in methods of research. These educational methods and results are not part of this paper.

PROFILE MASTER OF ARCH + URB

ASSIGNMENT	DESIGN PRACTICE + POSITIONING										EXPOSURE	REFLECTION	
	framework		approach		data gathering		data analysis		data structuring	concluding	communicating		
activities	activities	tools	activities	tools	activities	tools	activities	tools	tools	activities	activities	tools	activities
				internet research reference project content analysis		hypothesis testing experimental design objective quantitative measurement highly structured questionnaire Interview shedule observation document review probability sampling interview questionnaire survey			project specs median mode range mean quartile standard deviation and variance data processing		percentage chart spider chart table scatter plot number line chart area chart pie chart clustered column chart bar chart map		
project brief	determine aspects and motives to investigate	building scenario Internet research logic model delphi method brainstorming mapping process mood board mind mapping metaphorical thinking storyboarding morphological analysis technology forecasting checklist sensing interview benchmarking focus group ontology	formulate research plan engage stakeholders assess feasibility and usefulness establish, monitor and review procedures determine research question determine methods and procedures of measurement investigate current practice building theory	preconceived notion character intuition experience ranking, voting or scoring method risk analysis approach economic rating method mathematical approach comparative approach interview panel group discussion expert consultation survey strategy	data collection and monitoring prototype and trial idea development monitoring action	quantitative qualitative	selection of the right findings	framework analysis content analysis grounded theory narrative analysis discourse analysis testing knowledge based intuition writing narrative comparison site analysis	co-occurence frequency structural coping hierarchical clustering technique graph theoretic data reduction technique building logic modeling writing prioritizing finding opportunities translating documenting proofing concepting layering data drawing sketching building scenarios	interpreting data gathering evidence	communicate importance of the result launch simplification	quantitative qualitative	create follow up plan review recommendations reflect on aquired knowledge
reflect on current practice													
<p>The creative design process can be seen as a continuous loop of research, testing and critical reflection, which repeats itself various times during a project and is only closed by the deadline. Critical reflection, in the form of selection, comparison, simplification, prioritization, building of scenarios and logic and the writing of narratives, is a key activity and should be repeated at various stages throughout the design process. Tutors guide the students in their creative process and critical thinking through constructive feedback.</p> <p>It has become evident that there goes little effort into frameworking activities before starting a research, students mainly rely on internet research and gather large amounts of non critical evidence and findings. Especially in first year, students dive right into research without engaging in any planning activities beforehand.</p>													
<p>key</p> <p>activities</p> <p>tools</p> <p>applied</p> <p>new and applied</p>													

INTERVIEW MASTER OF CHOREOGRAPHY

Interview summary Dirk Dumon
head/tutor @ Master Choreography

General questions

1) *Can you describe how typical creative design processes at this master study are organized?*

It is a two-year part-time master. Students enter with a research question. First year starts with an introduction to artistic research, specifically practice-led research. The first year starts in step one with mapping the universe; themes and ideas from where students start to create/make. Step two is mapping constellations that explores interrelationships between what was concluded in the first step. At step three a first basic essay is written. Finally in step four a second, deeper essay is written. The year master is divided into three lines, research, craft and project, that already come together in the first year. Theoretical and physical prototyping is a major aspect. In the second year there are two big processes divided in three blocks. In the first block, students engage in the first full research cycle, starting from the research question from year one. Here they go through specific steps: step one: design (questions, sources), step two: do and document, step three: reflect and step four: share with peers. Meanwhile there are in-depth lectures about approaches to the steps with a research catalogue and mentors that guide them on a weekly basis. After the first cycle, students complete the cycle again, this time also reporting the research in one of four possible forms: essay, essay on the research catalogue, exposition on the research catalogue, or live exposition. Alongside this, there is the practical assignment of creating a choreography, which should be linked to the research.

2) *What are the typical steps that your students take during creative design processes within this master study? When/where in these processes is research usually implemented?*

See question 1.

3) *What kinds of research methods are taught and practiced at your academy?*

Specifically practice-led methods and approaches, mostly qualitative (e.g. phenomenological approaches). Students get an introduction, but it is up to the students to find their methodologies.

4) *Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do your students implement applied research as part of your/their creative design processes? If so, to what extent do your students use the findings of applied research in their projects?*

Practice-led research should not stand alone, but the practice should steer the research (intrinsically in the name). All practice students do research and in the master they learn to deepen their awareness of research and grow their toolbox. By this, theory and practice become integrated.

5) *From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?*

See question 4.

Research+design process

Framework

6) *How do your students start up a project in terms of research and what steps do they take to arrive at a certain mindset, a tuning of the brain that allows them to best cope with the assignment?*

It starts with a step-by-step discovery of what artistic research is and what writing is in a research environment. It is a learning process and different for everyone.

7) *To what extent does the mindset change during the process and because of what?*

For some students learning about artistic research generates a shift in the mindset. However, competences and potentials differ, so this is not the case for everyone.

Approach

8) *Are there any planning activities your students engage in before starting their research process?*

It is a requirement that students already have a practice and a connection with the working field. This should inspire a research urgency within the students. Sometimes it is consciously there, sometimes it is not. In that case a framework is required to unlock it.

9) *Do your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to your students? If so, what aspects are most crucial to a strong research plan and why?*

If they create a plan, it comes from their own urgency. If students do not feel the urge to do the research, then there is no point to invest time in it.

Data Gathering

10) *Which methods of data gathering are you familiar with?*

Writing essays, creating physical and theoretical prototypes, filming, recording, interviewing and the integration of multiple data gathering methods.

11) *Which methods do your students use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates their personal preference? In case of variable methods, what informed the choice of method? Can you give an example?*

Students that already did a master program will build on the body of knowledge they already acquired. Sometimes though, the methods they are familiar with are not suited for their current research project. Other students still have to explore, they need to discover methods by doing, and sometimes they get lost.

Data analysis/selection of findings

12) *What do you think makes a 'good finding' in applied research?*

When it relates back to the aim of the research and the student's own urgency (see question 9). Some of the current masters, if they want to be sustainable for student and have a long term impact, should emphasize on that.

13) *How do your students select the good findings from all their research findings?*

Especially in the first year through trial-and-error. By the end of the first year, students are more aware of where they stand through reflection, together with the mentor, on what worked out and what did not. In the second year it is still a learning process, particularly to step up to the level of critical reflection. Communicated progress and feedback and feed forward can be integrated in the direction they wish to go.

14) *Can you think of ways to reach good findings more directly?*

No, because the process, the selection and the trial and error are also important. The final result can only be good if the process ahead of it was good.

Implementation of findings

15) *To what extent do you think that research findings can alter your students' position towards the assignment? Can you give an example?*

A lot, but not for everyone. Some students are willing to take a step into their full potential.

Students then sometimes make major shifts to really rearrange and construct their own thinking in regard to where they were heading. An example is a student that developed a choreography game for people with a disability, that really had an impact in that community. Some people who never thought they would be able to create something in public space, were able to dance in public for the first time. Another student went back to the favelas, to do his work there and apply it there. Another example is a student that already had a PhD in Business Studies but she also loved dance. The topic she researched was intuition. Intuition itself is acquainted in choreography and dance, but the way how she approached it to make it more tangible, as well for her as choreographer but also for the performance, that is something interesting.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

They can't be separated. The research theme is based on intuition. States of being are not always conscious. They might start subconscious and only become conscious later. Most important are an open mind, an open heart and an open will. Then consciousness and subconsciousness will align and merge in the process very naturally.

17) How do your students implement the findings in the creative process? Are there any specific approaches to doing so?

They are implemented in a final performance. Also during the assignment they are able to talk about it and reflect on it. A reflection that is not only a personal reflection, but as a choreographer, to go into the meta position and reflect on the reflection. At the same time some use a research catalogue or exegeses, references to film and rehearsal. We try to integrate this creative aspect into their practice, research and documentation.

Improvement of research process and tool

18) Having now discussed your students' average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

Our Academy is a young master, joined with CODART, which is interesting but also can be challenging. Overall it is on a good track, but the program could be simplified, less rigid and more open as well as more creative and less time-based.

19) If your students would be given a library of applied research tools and activities, to what extent do you think it would help to construct their own, improved research method?

All means are welcome. Students don't often go into a physical library. It could be seen as a navigation system that points people in the right direction. On the other hand sometimes it is better to open a door, but let students explore themselves. There is a balance to be found between giving information and creating a context for exploration. It could be relevant to link the information in the diagram back to the sources, for students to read by themselves.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

There was a circus student that worked as an aerialist with a bachelor in design. She used the research catalogue to create her final research and additionally a book in which all the levels of her research were documented (also colours, pictures and text), and it was fascinating how she integrated different theories beyond the art into her research, as artist, activist, aware and conscious about environment problematics. The final performance was also relating to that, because she used the roots of trees on stage, a very interesting

interconnection between the performance and the research.

Interdisciplinarity

21) Do your students participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

The faculty is interdisciplinary, because students from different disciplines work in teams. They are more and more willing to -and in need of- collaboration, and are increasingly interested in other disciplines. Due to corona, for instance, students had to go into filming.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

A living scenography where the scenography is not static and works together with the choreography, but there are so many, in every piece you could find something.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

... question not answered because of lack of time.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

... question not answered because of lack of time.

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

... question not answered because of lack of time.

INTERVIEW MASTER OF CHOREOGRAPHY

Interview summary Carmen Raffaella Küster
alumna @ Master Choreography

General questions

1) *Can you describe how typical creative design processes at this master study are organized?*

It is hard to talk about the typical design processes in my master study because these are very individual. Every project has its own approach. In my master I have the feeling that the academy gave a nice open framework with a pre-defined structure for the whole process. The process is called DDRES: design, document, reflect, evaluate, and share. You go through these steps during the master, at least twice, but it is up to the student to decide where to put emphasis, how to structure it and how often to go through. I repeated the process two times, but some of the steps probably happened more often.

2) *What are the typical steps that you take during creative design processes within this master study? When/where in these processes is research usually implemented?*

Research is the process, I cannot define the moment when there is research and the moment when there isn't research anymore, they are non-separable.

3) *What kinds of research methods are taught and practiced at your academy?*

That is hard to answer, I am not sure if I can really say that they teach research methods. The master was based on the artistic research criteria of Hasemann & Mafe to define what research is and understand a bit how you could structure it but it is not that they give you a very specific method. There are little workshops for inspiration, where you see examples of other people and other projects. Maybe because of the huge diversity of the students' backgrounds, it makes sense to let people find their own method.

4) *Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do you implement applied research as part of your creative design processes? If so, to what extent do you use the findings of applied research in your projects?*

The whole thing is applied research. It doesn't stop and start. There were some moments of insights though.

5) *From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?*

I always used applied research to a certain extent, maybe sometimes there is not enough time but certainly it improves results. There are different results, some of those go deeper and you can find new things, because if you are too much focused on the final product, if you already from the beginning have a very specific idea of what you want, you won't find new things because you are limiting yourself from the beginning.

Research+design process

Framework

6) *How do you start up a project in terms of research and what steps do you take to arrive at a certain mindset, a tuning of the brain that allows you to best cope with the assignment?*

Defining 'the topic', 'the question' or 'the problem', it depends how you call it. After the definition I go in-depth with understanding each word, look up the definition. This could be a starting point to understand what you are going to do and finding essence and listen to the needs of the specific project. Every project might call for an individually tailored approach. The methods of data gathering are variable, they depend on the project: it could be starting from movement and then verbalize them in a physical way, it could be more brainwork and written designs or it could be more material-based. Can be both, practical activities but also theoretical.

7) *To what extent does the mindset change during the process and because of what?*

Sometimes it can change a lot, if you really get into something it can change the thinking about the whole field, but it can also be small things.

Approach

8) *Are there any planning activities you engage in before starting your research process?*

Some things are already planned to structure the process. For example, the deadlines of the assignment, applying for funding (I didn't receive it and it changed a little bit the plan), how many people are involved in the process and other organizational things. You must plan the external factors but not too much in detail, because the research is a journey into the unknown. I think that planning in detail is useless because it changes anyway, so better just have a rough plan, for the most important things. For the rest it gets more and more abstract the further it gets.

9) *Do you generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to you? If so, what aspects are most crucial to a strong research plan and why?*

I had a complicated setup for the performance (aerial acrobatics). I had to plan logistics and rehearsals, how to transport things, define a show, plan rehearsal space. At the same time, apart from those necessities, I also had to come up with ideas and a certain plan how to refine my movement research and in which ways to integrate the findings in the performance piece. It is important to identify which parts of the process need a bit more work and then find a solution for that.

Data gathering

10) *Which methods of data gathering are you familiar with?*

Rehearsals, exercises, reading, understanding movement, drawings, sketches, and writing. It is a mix of many things from many perspectives and using the insights from many aspects.

11) *Which methods do you use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates your personal preference? In case of variable methods, what informed the choice of method? Can you give an example?*

Maybe is the same as we discussed in the previous question 10, to try and test many forms of gathering information. Drawing, writing, reading, movement. In my case it comes from a mix of things in my background: design, visual communication, product design and circus mostly. As a designer you become specialized in not being specialized. Circus is artistic, but also physical and sporty. It always is necessary to experiment and think within other forms.

Data analysis / selection of findings

12) *What do you think makes a 'good finding' in applied research?*

Something that surprises yourself. In the first place it could maybe also be a bit disturbing. But in the end a good finding is new and unexpected, and it brings you further than something you already knew before.

13) *How do you select the good findings from all your research findings?*

It is more about feeling, intuition. If it provokes intense emotions, something that you are passionate about, curious to understand better, then you will go further.

14) *Can you think of ways to reach good findings more directly?*

There are no shortcuts. It's always just trying, trust that it will come. Try to dig deep, understand as much as you can, but also let go at some point. The more you force, the longer it

takes. Moments of relaxation were most crucial. In my case it happened while I was riding a bike, it just popped up. But it can only happen when in the back of the brain there is already information. It requires gathering information on many levels.

Implementations of findings

15) To what extent do you think that research findings can alter your position towards the assignment? Can you give an example?

It does a lot, because as I already said it is a journey into the unknown. I really want to keep it open for insights and then you can change the direction. You must provide the space and openness for things to just happen. I never wanted a huge flying tree root because that would be very unpractical, but in the process it became clear that it was very important to have it. It happened randomly, at first it was a stupid idea, but upon some reflections it really became apparent that it was a perfect conclusion to what I had been doing. In a way it became logical, because many things came well together.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

I think they self-balance in some way. You do a lot of thinking and try to understand consciously, but you must leave space for things to subconsciously happen and appear. In that way there can be a conscious reflection on that.

17) How do you implement the findings in the creative process? Are there any specific approaches to doing so?

It depends very much on the context and the type of finding. You need to find a way each time.

Improvement of research process and tool

18) Having now discussed your average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

It will always change how I do research, because after each process you always have findings on a meta level on how research is conducted. It also depends on context and external factors. Form and content are closely related, you can't just apply form to some other content that asks for very different things.

19) If you would be given a library of applied research tools and activities, to what extent do you think it would help to construct your own, improved research method?

I think it is too theoretical. It would be more helpful to get into tools in more practical ways. Just text is a little bit hard.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

Even in the circus there are shows where you really see that they do research. There is a French company, I did a workshop with them, they do very deep research and in the end you really see that the method they teach in their workshops is in the show. It becomes apparent through the form of communication in the group. The creation of a mind and body set. Even when there is freedom to let things appear through improvisation at a particular moment, there is a clear mind and body set as a structure.

Interdisciplinarity

21) Did you participate in interdisciplinary processes and projects with other academies at FHK

or elsewhere?

There was no collaboration with other parts of the academy because most of the activities were online. I did six-week physical stuff and it was very intense, but just in the own group. **22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?**

It should be visible in many aspects. Perspectives and knowledge from many kinds of fields. Not just an object that is put into another context. Thinking happens in an interwoven way. Come up with something synergetic, a kind of process you go through together, a 'ping-pong' back and forth.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Applied research is essential to interdisciplinarity on a basic level. The more you invest in it, the more it propels you forward.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

...

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

The method must be very abstract with a rough framework that leaves space, so that individuality can become important. Every artist should find the own way. On the other hand, there could be someone to facilitate your individual process within the space. That is the difficult balance to find.

PROFILE MASTER OF CHOREOGRAPHY

ASSIGNMENT	DESIGN PRACTICE + POSITIONING										EXPOSURE		REFLECTION
	framework		approach		data gathering		data analysis		data structuring	concluding	communicating		
activities	activities	tools	activities	tools	activities	tools	activities	tools	tools	activities	activities	tools	activities

INTERVIEW MASTER EDUCATION IN ARTS

Interview summary Emily Huurdeman
tutor @ Master Education in Arts

General questions

1) Can you describe how typical creative design processes at this master study are organized?

Students start with a research proposal and a vision paper in the first year. The second year can be divided into two stages. The first is logging of research on a platform of choice and positioning (theoretical framework). The second is defense, through communication. Communication can be done in any form, e.g. with a poster, performance or a theater piece.

2) What are the typical steps that your students take during creative design processes within this master study? When/where in these processes is research usually implemented?

In order to start research, a general plan is made and keywords are defined from the vision. Keywords are made visual, for example in mind maps, and used to place research in a relevant research field. Students do practice assignments; start and discuss together in class. The motivation for, and relevance of, the research topic informs the research question. Then it is time for the hypothesis and finally conducting the research through different methods.

3) What kinds of research methods are taught and practiced at your academy?

A lot of methods based on artistic steps are taught, for example crafting methods by test cases and experiments, and artistic research by approaching from different perspectives. Students also are provided a TISDD method library as a start to orient themselves. Students do interviews and get feedback from a large diversity of peers and extracurricular tutors to select the most relevant results.

4) Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do your students implement applied research as part of your/their creative design processes? If so, to what extent do your students use the findings of applied research in their projects?

In this master it is difficult to detach applied research from the creative design process. Visualizing, practicing and research together provides insights.

5) From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

We have a diverse student population. Students with an academic background need more practice to get used to artistic, practical approach but allows them to escape from theoretical context and start applying it. Meanwhile, some artists have problems with the teaching and the academic research. For them research grounds or informs their practice more.

Research+design process Framework

6) How do your students start up a project in terms of research and what steps do they take to arrive at a certain mindset, a tuning of the brain that allows them to best cope with the assignment?

The mindset is super important. The focus on the skills of doing research, instead of providing pre-defined input; these create a research mindset. As a basic departure for students there is a book on research. Crucial skills are knowing different ways and places to gather data from and how to evaluate the data. Here keywords are important again. Students do trials to practice their skills.

7) To what extent does the mindset change during the process and because of what?

It differs from student to student. At the master the hope is for students to be curious, be informed and to question their position and to know where to look for answers. That forms the mindset and that changes the process a lot.

Approach

8) Are there any planning activities your students engage in before starting their research process?

Planning activities are part of the research proposal at the end. It includes a timeline and manageability.

9) Do your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to your students? If so, what aspects are most crucial to a strong research plan and why?

The most important is creating a realistic time frame and reflection on how to document and weigh material. It is important to imagine which steps to take beforehand.

Data Gathering

10) Which methods of data gathering are you familiar with?

Observations and interviews get the most attention. Important is providing students with options. It gives them ownership and freedom. It could be any type of material, like photos, writings, and videos. It is important for students to explain their motivation and what they want to retrieve from the data.

11) Which methods do your students use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates their personal preference? In case of variable methods, what informed the choice of method? Can you give an example?

Interviewing and observing are most popular. Prototyping and experimentation are sometimes underrated. The preference of students is motivated by their previous education.

Data analysis/selection of findings

12) What do you think makes a 'good finding' in applied research?

A good finding has a logical causality, or confirms a theory that can also be relevant in a similar context. A finding can also be good if it does not confirm a theory, as long as students reflect on and can argue for the causality of the finding. The way findings are analyzed is what makes them perform well or worse.

13) How do your students select the good findings from all their research findings?

Selecting findings is the most challenging part. By questioning which data is required, based on the research question. The relationship between research and data evaluation is inter-subjective. Research requires interpretation. Students are free to choose on what they want to focus, so motivation and relevance are crucial. The research context is often personal, interpersonal (team, collaborations), professional (standing of the institute), international and universal (convictions and beliefs). Understanding this allows students to be aware of the lens they are looking through. Finally, it is also important to know what not to focus on.

14) Can you think of ways to reach good findings more directly?

By constantly relating back to the research question. Search, collect, reflect and relate back to the question; always see it as a full package. Also try little things and draw sub-conclusions. These also are important, not just the final conclusion or product.

Implementation of findings

15) To what extent do you think that research findings can alter your students' position towards the assignment? Can you give an example?

Really feeling your research is more than an assignment. It should stand on its own and have ownership. In this master program communication is apart from research, so the research findings directly determine the format of communication. The initial ideas about the format of communication may change as a result of the findings. An example is writing a policy note and the findings show that communication has to be a workshop or a theatre performance. Students have to be open to allow their mind to change.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

In practice a lot happens subconsciously. It is perfectly fine to be intuitive and subconscious and then reflect, but also be aware when it is influenced by subconsciousness. Subconsciousness is productive if deployed consciously, so use consciousness and subconsciousness together.

17) How do your students implement the findings in the creative process? Are there any specific approaches to doing so?

There are no specific approaches, because we have a broad range of students and some students don't even have a strong practice. By separating research and communication in our master program we hope for inherent causality. Art education is different from artistic practice because the output is not necessarily a physical product as it can also be a teaching method for instance.

Improvement of research process and tool

18) Having now discussed your students' average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

There is always reflection on the program. Core of the master is that there is not one supervisor, but a lot of peer feedback through different perspectives. We try to balance how to keep it concrete, but also sufficiently complex to provide freedom and ownership. The core is fixed, but how to deal with it is continuously adapted and is based on reflection and feedback. This keeps it actual and relevant.

19) If your students would be given a library of applied research tools and activities, to what extent do you think it would help to construct their own, improved research method?

Yes, definitely useful. But subjectivity in missing motivation for choice is most important. Still, as a database it is useful to see all the options, and always good to have connections between different fields. Cartography, clustering, SWOT analysis and visual mapping are examples of used tools.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

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Interdisciplinarity

21) Do your students participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

FHK Research Days are specifically aimed at interdisciplinarity exchange. Also interdisciplinary bootcamps in the bachelor are a great initiative. In Café Chercher unfinished research projects are presented on different levels, institutions and disciplines. We are developing ways to embed this in the master as well. The master is also inherently interdisciplinary.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

Interdisciplinarity is not just about different disciplines, but about diverse forms of knowledge and educational backgrounds as well. So, approach it from different views, influenced by other perspectives, incorporated and connected. Take the subject and allow it to be influenced by different people. The criteria can be different from field to field. Always make a point of having variety, in different areas.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Not just by having separate elements towards an end product, but focusing on an exchange of perspectives throughout the process can enhance interdisciplinary projects. It requires opening up one's practice and allowing oneself to be influenced. Peer feedback is important, questioning how it would be from one's own perspective.

24/25) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why? Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

There is a lot of potential for interdisciplinarity at FHK because it houses many disciplines under one roof. There can even be exchange of thoughts on topics or questions in the process, not just the outputs. And not only between experts and students, but also among students. In terms of research methods, those that allow to approach the subject from different perspectives would facilitate interdisciplinarity, like for example essaying in art and the Falk-method.

INTERVIEW MASTER EDUCATION IN ARTS

Interview summary Sophie de Ruijter
alumna @ Master Education in Arts

General questions

1) Can you describe how typical creative design processes at this master study are organized?

Ahead of the design processes, it all kickstarted with group dialogues that led to inspiration. Sources of dialogue were texts, articles, video's, dance, etc. Discussions triggered opinions, new ideas and an open attitude. The first year you were on your own path because of covid, but also online with break out rooms. At the academy it would happen in live group sessions. The next step was to learn how to collect, for example by digital resources, through assignments per person, so by yourself and supported in a structured way by the tutors. I realized the conscious creative process was not there yet.

2) What are the typical steps that you take during creative design processes within this master study? When/where in these processes is research usually implemented?

All students had their own steps; it was personal and subjective. I was collecting data through reading a lot of literature and interviewing, talking. After that I made a cultural probe with data mapping and after that the design process with testing ideas and experimenting in loops. All students had their own process, some would for example make an artwork. After the probing my next step was an artistic experiment with musicians, again a loop with dialogues and interviews. At the end I shared a mini documentary with the world that triggered ongoing experiments of others.

3) What kinds of research methods are taught and practiced at your academy?

The academy made a research catalogue with surveys, experiments, interviews, case studies, observations, and case studies. I had personal choice from the catalogue with discussions and reflection in my own focus peer group. The focus group was most important for me, because of reflection from other disciplines, like painting, drama, public art, because students come from various disciplines.

4) Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do you implement applied research as part of your creative design processes? If so, to what extent do you use the findings of applied research in your projects?

Yes, it is about relevance because I started from a practical problem. I used all of it because that is how I am. The musicians that reflected to me became a community for me. It was about the self-consciousness, the creativity of a musician. It became more like a network that delivered new information and new thoughts.

5) From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

Applied research with all these new fields, made me into a spider. Applied research is successful in the sense that it makes you do creative processes and things that you would otherwise never do.

Research+design process Framework

6) How do you start up a project in terms of research and what steps do you take to arrive at a certain mindset, a tuning of the brain that allows you to best cope with the assignment?

For me it was writing, making music and document myself. We started the second year in September and in November I was stuck, without proper focus and allowed myself reading and making music even more.

7) To what extent does the mindset change during the process and because of what?

In January I had a peer talk with my two tutors about my rather precise and sensitive project.

They mentioned a source, a lead that tuned my brain and triggered the follow up. After that the assignment was finished in two months because I absorbed so much already.

Approach

8) Are there any planning activities you engage in before starting your research process?

Planning the research phase ahead, I scheduled every other Friday as a free day, and I made a map on my door with the why, what, and how to do's. This led to activities that I worked into a time schedule. But overall, it is very important to be flexible, to cope with disturbances like covid.

9) Do you generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to you? If so, what aspects are most crucial to a strong research plan and why?

see 8. Sticking to your core is important as well. Keep coming back to your 'why', your hypothesis, that allows you to go deeper and deeper into the matter and converge, like in a funnel. In my case it was a statement to be confirmed, to be right or wrong.

Data gathering

10) Which methods of data gathering are you familiar with?

Reading, interviews, online research, observations, simulations, processing.

11) Which methods do you use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates your personal preference? In case of variable methods, what informed the choice of method? Can you give an example?

Methods are variable. Informed by reading a particular book on philosophy. I had to go back in time several centuries, so reading and talking was the right thing to do.

Data analysis / selection of findings

12) What do you think makes a 'good finding' in applied research?

The source matters; where do I find it. We had to come up with five typical words or themes that would cover or describe the research. Important is to find out which findings do match the five.

13) How do you select the good findings from all your research findings?

Three criteria: first through the match with the five themes, secondly if they can answer the research question and thirdly if they meet the 'why do I do this?'. It works like a sieve.

14) Can you think of ways to reach good findings more directly?

I made a website to finalize my research and to share the sources and findings with the people. If you want to dig deeper, you can do that with the help of other people. Together we know so much more.

Implementations of findings

15) To what extent do you think that research findings can alter your position towards the assignment? Can you give an example?

It went up and down, made me feel insecure and distracted from my question. In the end research findings make you stronger and give you courage.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

During an experiment during the lockdown while playing my piece again, I tried it on myself before giving it to my other musicians. The experiment was conscious, but I sensed that I played it different, more freely and that happened subconscious.

17) How do you implement the findings in the creative process? Are there any specific approaches to doing so?

Implementing findings was through experimenting, testing, talking and my journal, a diary of daily notes through which I reflected on what I did.

Improvement of research process and tool

18) Having now discussed your average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

It always is a new process but acquired knowledge how to do research makes the starting of a research much easier, less scary. The possible difference in approach depends on the subject. If it is known already or not. For new subjects you must be flexible as a researcher. If you are too restricted, you lose sight on the most interesting issues.

19) If you would be given a library of applied research tools and activities, to what extent do you think it would help to construct your own, improved research method?

Of course, but it should not only be reading about the tools, but be about making it practical as well, including the ways to do testing on items of the library. That would make it much more interesting and complete.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

The project that delivered the most interesting information was my cultural probe that started in a different way than usual. I asked musicians to participate in an experiment. I posted them an analogue package, connected to a website that explained the experiments. So, they were part of an 'anadiga' cultural probe while being in the unknown. After that I organized interviews with reflection. From the experiments and responses I made a new website. The interviews delivered a lot because the participants experienced the package as very personal. To be personal in applied research works very well.

Interdisciplinarity

21) Did you participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

No, apart from two meetings with the people of public performance, which was just a little mini project for two weeks. There was almost no time.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

I do not know, because we had no such projects.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Yes, because you have one common starting point.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

see 22.

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

No methods, but my recommendation would be to do artistic experimenting together, among disciplines, and make sure sufficient time is reserved.

methods of applied research in FHK master studies / November 2021

INTERVIEW MASTER OF MUSIC

General questions

1) Can you describe how typical creative design processes at this master study are organized?

Unlike the visual arts, there is no solid end product in performance arts. Music passes away through time, it never is the same even if recorded, due to change of mood, surroundings or acoustics. The Master of Music is all about opening up: 'be your own artist.'

2) What are the typical steps that your students take during creative design processes within this master study? When/where in these processes is research usually implemented?

Very diverse because many, completely different disciplines assemble in one domain. Literature research always is involved, also in the form of case studies. Research is at the center and happens throughout. Self-critical reflection and experimentation are important. It is important for every student to make his/her own journey explicit.

3) What kinds of research methods are taught and practiced at your academy?

Developed methods are tuned to the specific needs of the students: knowing 'that' (knowledge of artistic research) versus knowing 'how' (academic knowledge). A few of the general methods taught are analysis of performance and recording, composing music, self critical reflection on the own practice through the form of journaling and recording, and expert consultation.

4) Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do your students implement applied research as part of your/their creative design processes? If so, to what extent do your students use the findings of applied research in their projects?

All research has to be applied, everything has to have a practical component and focus. Grading components within the research protocol focus onto the artistic outcome of the research. The essential question is how it is connected and implemented in practice: if there is no artistic application it doesn't fit into the program.

5) From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

Applied research is essential to the creative process in this master study and only applied research is accepted.

Research+design process

Framework

6) How do your students start up a project in terms of research and what steps do they take to arrive at a certain mindset, a tuning of the brain that allows them to best cope with the assignment?

Very individual, as it starts from introspection and interrogating the own practice, uncovering burning questions and then narrowing down into a framework. Artistic research is growing; in music it is becoming less individual, more like a clustering of topics. The tutor has a crucial role to assist students to find these correlating clusters.

7) To what extent does the mindset change during the process and because of what?

The mindset is changing a great deal throughout the process. Critical self-reflection inspires research and research inspires the development of the artist's identity the other way. Students need to open up, mostly under a very rigid educational system.

Approach

8) Do your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to your students? If so, what aspects are most crucial to a

strong research plan and why?

Planning starts before the first master year (during matriculation) with a research proposal and a timeline.

9) Do your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to your students? If so, what aspects are most crucial to a strong research plan and why?

A good plan will be sufficiently narrowed down to be realistic and broad enough to be artistically interesting. This triggers students to move on and explore. Initially it is not important to have a pre-defined research question.

Data Gathering

10/11) Which methods of data gathering are you familiar with? Which methods do your students use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates their personal preference? In case of variable methods, what informed the choice of method? Can you give an example?

It is individual, based on the project. Literature research and case studies are involved always. Also interviews, experimentation (creating compositions and arrangements, building instruments, creating performances) and reflection (journaling, recording and adjusting).

Data analysis/selection of findings

12) What do you think makes a 'good finding' in applied research?

Good findings are useful and fruitful. 'Can we create art with this, what is interesting?' 'By making it explicit, can we help other artists?' Failure is acceptable; what might not be fruitful will show other territories to explore anyhow.

13) How do your students select the good findings from all their research findings?

Findings are not extensive, data is. 'Findings' is the selecting and combining of data. Selecting data happens through narrowing and scoping.

14) Can you think of ways to reach good findings more directly?

Reaching to findings more directly can be through making the topic sufficiently narrow and consulting experts.

Implementation of findings

15) To what extent do you think that research findings can alter your students' position towards the assignment? Can you give an example?

That happens very often. A student for instance defined the final research question just two weeks before the deadline because of sudden inspiration. It is important for tutors to not be too rigid and give students sufficient space to grow and think.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

Music relies on the subconsciousness; for instance fingering on piano. Subconsciousness builds through conscious doing in the first place. In artistic research it is important to make the subconsciousness conscious, whilst preserving the subconscious flow of music. The relationship between the conscious and the subconscious goes both ways and is very important.

17) How do your students implement the findings in the creative process? Are there any specific approaches to doing so?

The approach is by an autobiographical analysis, by questioning the own practice. The methods used are self-recording, learning new things for yourself, journaling. The best results are achieved through systematic approaches that make the journey explicit.

Improvement of research process and tool

18) Having now discussed your students' average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

The way of teaching is constantly changing. We are in the midst of constant tweaking of the curriculum, because the field rapidly develops. We started general and formal, and formulating good research questions was considered important. Now we get to more focus and the value of artistic practice is gaining more importance. The room for improvement would be a clearer array of options for research elements and activities. We are currently in the process of finding out how to teach and guide students to conduct applied, practice-based artistic research. We try to create a way to include all different disciplines within this master study and make all students feel at home in the concept of artistic research.

19) If your students would be given a library of applied research tools and activities, to what extent do you think it would help to construct their own, improved research method?

It is very useful to give students an overview over the different domains of research. Currently we are trying to construct a similar overview for our academy, explaining seven to eight different domains, together with examples of what students have done in these areas. This is important for the Master of Music, because of its diversity.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

A Music Theatre student. She interrogated her interpretation of a role through one song, used a variety of sources and practical data, film performance, musical recording and analyzed all different aspects like physical presence on stage, reinacting and musical recordings. She explored a significant number of possibilities for a personal interpretation of the role. Another student, with a study on the music of the film *Fantastic Beasts*, aimed to arrange the film score for a string quartet in a 20-minute performance piece, while maintaining the flow of the filmscore and the events of the film. He went through all aspects of the score, rearranged it, studied different techniques to play on string instruments and tried to build the plot line of the film into his performance, which led to a deep and extensive research. A student from China barely spoke any English, and focussed onto an education research project. He developed a curriculum for children learning the violin and based it on games and play. Initially there were low expectations, but in the end surprising results with the graduate being accepted in a doctorate. A student studied 18th century French Cantatas, with the gestures of face, hands and body to represent emotions and characters. She was able to create a very engaging and emotive 18th-century piece.

Interdisciplinarity

21) Do your students participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

Yes, a little bit sporadically. Just a few students engage in interdisciplinary processes on their own initiative, this could be more encouraged by tutors.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

nary?

A lot of elements in performance arts are interdisciplinary; theater and music for example influence each other. It can be fruitful when impact works both ways or when it really adds to the performance. Care should be taken when making claims about issues in other disciplines, as there is a danger of amateurism.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Applied research can absolutely be a driver. Probably THE driver. The ambition to resolve something complex in the own practice can lead to other disciplines.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

...

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

That should come from the needs of student and from clusters of topics that naturally bring together disciplines. The Academy should facilitate this through grab and connect, based on needs, topics and interests. It would be important for students to know where to find each other. The various faculties should also work together on a research level. Crucial for students is to know where and how to find each other.

INTERVIEW MASTER OF MUSIC

General questions

1) *Can you describe how typical creative design processes at this master study are organized?*

The Master of Music consists of various disciplines. I did my research in the discipline of musical theatre. I realized that success as a theatre performer does not come from a technically flawless performance, but from letting the performance be rooted in personality and personal drivers. I thought that for the master of music and for music theatre you choose questions depending on the obstacles that you face in your work field. The course was organized in such a way that I could develop this.

2) *What are the typical steps that you take during creative design processes within this master study? When/where in these processes is research usually implemented?*

Research is added in the first steps, as a way to understand the context. Beyond that, research can be part of the development of the artistic process. Continuously analyzing information helps to determine where freedom is to be personal.

3) *What kinds of research methods are taught and practiced at your academy?*

Literature research (e.g. about history), case studies, re-enactment, making tables based on research. On research days with all music disciplines, general talks are held about how to form a research subject and what methods could be used. I made notes of what could be useful to my specific research as well as why.

4) *Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do you implement applied research as part of your creative design processes? If so, to what extent do you use the findings of applied research in your projects?*

Applied research is central to the process and relevant up to the very last part. It sparks curiosity into deeper research. By reflecting on the research, results find their way into the final product, a performance.

5) *From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?*

Yes, it does. Decisions are made more consciously and based on reflection. They thus are made for a reason, meaning the outcome shows a lot more of me.

Research+design process

Framework

6) *How do you start up a project in terms of research and what steps do you take to arrive at a certain mindset, a tuning of the brain that allows you to best cope with the assignment?*

Most important thing is to find the part that frustrates you and what you find interesting. Without that it is not possible to find the part that is new to what has already been done. A personal connection is required.

7) *To what extent does the mindset change during the process and because of what?*

The mindset changes when unexpected things are found and when implementation leads to success moments and thus in the confirmation of findings. Success is motivating.

Approach

8) *Are there any planning activities you engage in before starting your research process?*

Creating a specific outline with chapters and sub-chapters, including approaches to answer research questions. It helps to focus and be aware of the headed direction. The outline should be allowed to change along the way.

9) *Do you generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to you? If so, what aspects are most crucial to a strong research*

plan and why?

The research plan is the outline. The outline however is always bigger than the eventual outcome. There is no real time planning, except for the deadlines provided by the faculty and that worked for me.

Data Gathering

10) *Which methods of data gathering are you familiar with?*

Gathering and structuring are closely related, otherwise there is chaos. Familiar methods of gathering are interviews, observations, literature research (also theses and books), and analyzing sheet music. The research structure and methods presented in the books directly informed my research.

11) *Which methods do you use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates your personal preference? In case of variable methods, what informed the choice of method? Can you give an example?*

My preference has changed. Data gathering has become more to the point instead of random. Therefore it is also more efficient and with a clear focus.

Data analysis/selection of findings

12) *What do you think makes a 'good finding' in applied research?*

It can be two things: either a success moment or the opposite, a mismatch. It opens the subject and opens conversation about why there is a mismatch. The result can be deeper digging and finding smaller contributing elements. A good finding is not somewhere in the middle between a success moment and a mismatch, and is not right if not checked with other people, either professionals or non-professionals.

13) *How do you select the good findings from all your research findings?*

By relating the findings back to the research question. Findings should add to the research question. Sometimes findings are not obviously relevant, but upon reflection in fact they are.

14) *Can you think of ways to reach good findings more directly?*

Talk to professionals and look at professional work in the area of interest. There is no need to reinvent everything. Don't be afraid to use other people's findings.

Implementation of findings

15) *To what extent do you think that research findings can alter your position towards the assignment? Can you give an example?*

The mindset constantly changes. Even the research question changes. It happens when things are found that were not already anticipated and cannot be ignored. For example, you think you have to do only the musical analysis but you find that you cannot ignore interpretation. It helps to better understand the research subject and its contributing elements.

16) *In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?*

It is far more efficient and useful to be conscious, because it allows for better explanation and articulation. It also allows people to give more useful feedback and to inspire new ideas. Nevertheless, subconsciousness is still used. In musical performance the term 'attractor state' is often used to describe how someone would act in his/her most natural state. This is

inherently very personal and very subconscious.

17) How do you implement the findings in the creative process? Are there any specific approaches to doing so?

Findings cannot be separated from the creative process, they are the creative process. The process should be a continuous cycle of doing research, testing findings and reflecting on findings. Otherwise in the end there is an overload of information.

Improvement of research process and tool

18) Having now discussed your average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

I have found a way of doing research that works for me. I experienced for instance that I do not need a time schedule. One thing to maybe do differently is reserving a few more months, after the research is supposedly finished, to add findings that upon reflection are relevant and interesting to add.

19) If you would be given a library of applied research tools and activities, to what extent do you think it would help to construct your own, improved research method?

The tool is an overload of information crammed on one page. It is not readable for people with dyslexia. The tool needs someone to elucidate it. Then it can be useful, because there is a lot of relevant information that can lead you in understanding a little bit better what you are looking at, or what could be relevant for your research.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

A student did research into forbidden music; never played and mostly destroyed Jewish music. The student was able to use her skills not only to play those songs, but also to tell and explain the life of the composers. A good example of how research can be used to tell a story.

Interdisciplinarity

21) Did you participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

Not outside of music, but working together with a pianist. So interdisciplinarity between music and musical performance. Even within myself there is interdisciplinarity because I have a background in graphic design. I agree that every artist is a designer.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

Performances are inherently interdisciplinary because they rely on input from various different fields, for example as a musician you need a vocal coach or a dance coach.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

I checked my results with people in the same field, but I think that if I had consulted other fields it might have been interesting, because they might have seen it in a different way. Yes, it could be a driver in combination with other fields, but it has to be a choice of the researcher because it is easier to look inside your field, but that doesn't mean it is better.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

....

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

Methods themselves are very individual and specific to the discipline. The testing of the findings however could be interdisciplinary. So, not only checking results with professionals and non-professionals from the same discipline, but also from other disciplines. In the first year there were a lot of meetings with students from all music disciplines in which the start-up of the research projects was discussed. After that in the second year, when you gathered the results, it became very individual. There could have been more meetings to share the results with the different disciplines throughout the process.

PROFILE MASTER OF MUSIC

ASSIGNMENT	DESIGN PRACTICE + POSITIONING										EXPOSURE		REFLECTION
	framework		approach		data gathering		data analysis		data structuring	concluding	communicating		
activities	activities	tools	activities	tools	activities	tools	activities	tools	tools	activities	activities	tools	activities
		<div>introspection</div> <div>uncover buring question</div> <div>logic model</div> <div>delphi method</div> <div>brainstorming</div> <div>mapping process</div> <div>mood board</div> <div>mind mapping</div> <div>metaphorical thinking</div> <div>storyboarding</div> <div>morphological analysis</div> <div>technology forecasting</div> <div>checklist</div> <div>sensing interview</div> <div>benchmarking</div> <div>focus group</div> <div>ontology</div>		<div>creating research proposal</div> <div>time schedule</div> <div>preconceived notion</div> <div>character</div> <div>intuition</div> <div>experience</div> <div>ranking, voting or scoring method</div> <div>risk analysis approach</div> <div>economic rating method</div> <div>mathematical approach</div> <div>comparative approach</div> <div>interview</div> <div>panel group discussion</div> <div>expert consultation</div> <div>survey</div> <div>autobiographic analysis</div>		<div>hypothesis testing</div> <div>experimental design</div> <div>objective quantitative measurement</div> <div>highly structured questionnaire</div> <div>Interview shedule</div> <div>observation</div> <div>document review</div> <div>probability sampling</div> <div>interview</div> <div>questionnaire</div> <div>survey</div>		<div>swot analysis</div> <div>text analysis</div> <div>turf analysis</div> <div>trend analysis</div> <div>gap analysis</div> <div>maxdiff analysis</div> <div>cross tabulation</div> <div>conjoint analysis</div>	<div>median</div> <div>mode</div> <div>range</div> <div>mean</div> <div>quartile</div> <div>standard deviation and variance</div> <div>data processing</div>	<div>interpreting data</div> <div>gathering evidence</div>	<div>percentage chart</div> <div>spider chart</div> <div>table</div> <div>scatter plot</div> <div>number</div> <div>line chart</div> <div>area chart</div> <div>pie chart</div> <div>clustered column chart</div> <div>bar chart</div> <div>map</div>		
individual project brief	determine aspects and motives to investigate		formulate research plan		data collection and monitoring						communicate importance of the result		create follow up plan
project brief	interrogate own practice		engage stakeholders		prototype and trial		selection of the right findings				launch		review recommendations
reflect on current practice			assess feasibility and usefulness		monitoring action								reflect on aquired knowledge
			establish, monitor and review procedures		idea development								
			determine research question		experimentation								
			determine methods and procedures of measurement		reflection								
			investigate current practice										
			aquire new personal knowledge										

INTERVIEW MASTER OF PPS

Interview summary Danae Theodoridou
tutor @ PPS / Post Master Performing Public Space

General questions

1) *Can you describe how typical creative design processes at this master study are organized?*

The study is divided into three periods: setting the ground, concrete idea development and concluding, which is thinking about the outcome and how to communicate it. The creative design process is tailor made for each student. Students come to the academy with their own project. The initial design is revisited and evolves continuously, with critical feedback every three months during the assessment process and weekly tutoring sessions. Students present and reflect on their design in written form every three months, elaborating on what worked and what didn't work in their project.

2) *What are the typical steps that your students take during creative design processes within this master study? When/where in these processes is research usually implemented?*

The creative design processes are divided into four main steps that are repeated in each of the three periods: theoretical research (on their topic of research), contextualisation (positioning of the work in the art field, relation to the work of other artists), applied research in the studio and in the field, and self-reflection.

3) *What kinds of research methods are taught and practiced at your academy?*

Master Performing Public Space can be seen as a post-master. Students are artists that already have some experience in art making and research. The course offers distance learning while students are coached by tutors on a weekly basis and discuss the different methods they use to do research. During three bootcamps artistic research is discussed and practiced with tutors and invited artists.

4) *Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do your students implement applied research as part of your/their creative design processes? If so, to what extent do your students use the findings of applied research in their projects?*

Applied research is the project. An example is one student that looked at how she could change people's perspective of abandoned places through fictional narratives and audio walks. She works in the city of Marburg in Germany, where she used applied research through writing and looking at different ways of creating auditory experiences. Tests were done to develop the project further by gathering feedback from people walking through public places, experiencing the writings and audio scapes created in the frame of the project.

5) *From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?*

Applied research is absolutely essential in this master program, there is no project without it.

Research+design process

Framework

6) *How do your students start up a project in terms of research and what steps do they take to arrive at a certain mindset, a tuning of the brain that allows them to best cope with the assignment?*

It consists of two steps: placing the research in the right research area and narrowing it down to specific parameters. It is the part students struggle most with and where the shift needs to be made from artistic practice to artistic research. Students come to the course with their own thinking process and methods for artistic practice, but lack experience in artistic research. Initially, most of the students have a very broad proposal and need guidance to translate it into a specific research area and to narrow it down to a concrete research question and concrete parameters. It finalizes into constant negotiations between the need

to narrow down while not being too restrictive.

7) *To what extent does the mindset change during the process and because of what?*

That depends on the students, sometimes mindsets change a lot. They master artistic research and can take a position. Some may reject such methods of work and others continue working with it. In all cases though, their practice always changes, becomes more elaborated. It is always good to have a tool to self-reflect on your own work.

Approach

8) *Are there any planning activities your students engage in before starting their research process?*

That happens in the first period while setting the ground. At the start of academic year in September students come with a plan. Until mid-October, the first bootcamp, they work on it with tutors. They read introductory texts, think about personal development and elaborate on the design application as well as doing the initial experiments.

9) *Do your students generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to your students? If so, what aspects are most crucial to a strong research plan and why?*

Creating a clear time schedule and narrowing down the parameters of the research are the two most crucial parts to a strong research plan. Parameters are planned in advance. Some things go according to plan, some not, especially in public space because there are a lot of variables that cannot be controlled. Therefore there is a weekly evaluation of the plan. If things change, the plan is readjusted according to the situation.

Data Gathering

10) *Which methods of data gathering are you familiar with?*

Data gathering mainly is qualitative: feedback in written and sometimes in oral form and interviews with other artists collected in writing. Every week students have to reflect on their project and progress in writing.

11) *Which methods do your students use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates their personal preference? In case of variable methods, what informed the choice of method? Can you give an example?*

Students have their own methods and they usually start with what is most familiar and tend to stick to that. Tutors try to introduce new methods. It is challenging to find out which methods the project requires. It starts with a selection of the artistic means, writing, and then suitable methods to work with through which the means are developed. It is complex, even the word 'method' is new to them. Students usually lack knowledge on artistic research from their previous education.

Data analysis/selection of findings

12) *What do you think makes a 'good finding' in applied research?*

Good findings have a high level of self-reflection and engage with topics of research on a deeper level. An example is a project on the function of digital public space. The student looked at social media like Instagram, Facebook etc. After lockdown the student looked at how digital public space uses some embodied elements, like eye movement and gestures, of physical public space. The student responded immediately to change, created something

very relevant and gave something concrete to community.

13) How do your students select the good findings from all their research findings?

That happens together with the tutor on a weekly basis, by continuously returning to the aim of the project.

14) Can you think of ways to reach good findings more directly?

There are no good or bad findings. The exact same finding can be good or bad depending on what the research looks for. That is why continuous reflection is important. Therein it is important to distinguish between a finding that is interesting but does not correspond with the current research aim, a finding that is enjoyable for the audience but not relevant to artistic research in any case, and a finding that directly corresponds with the current research aim.

Implementation of findings

15) To what extent do you think that research findings can alter your students' position towards the assignment? Can you give an example?

A lot. Personal practice changes students that are able to create stronger proposals, develop a critical way of thinking about theory. Their own work develops a lot and their mindsets change to more collaborative and communal ways of working. Examples are students that curate festivals and initiate more community projects or even create collectives together.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

Subconsciousness cannot be controlled, from the moment one thinks of it, it becomes conscious. Examples of subconscious knowledge are students that produce interesting findings and are unaware of it or cannot articulate the knowledge generated. Tutors help to observe outcomes more sharply. Students are assessed by documenting, writing about and presenting their work in a committee of experts as it is essential to be able to talk about the own work. It is important to help students to be critically aware. Generally, artists have more subconscious awareness than conscious awareness and thus might not know how to contextualise what they do.

17) How do your students implement the findings in the creative process? Are there any specific approaches to doing so?

Implementation of findings is project specific. Findings are evaluated on a weekly basis with the tutor one to one, always referring back to the project aims. It can lead to a complete change of the means.

Improvement of research process and tool

18) Having now discussed your students' average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

The way to teach research develops constantly based on the feedback. Two examples of things to improve are how collaboration and collaborative research should be done between students and more assistance on working with theory through reading and writing.

19) If your students would be given a library of applied research tools and activities, to what extent do you think it would help to construct their own, improved research method?

Tools for research methods could be useful on an initial level if constantly updated and accompanied by an explanation, by support and by a step-by-step guide. If not it might be

too chaotic, confusing and overwhelming. It is important to remember that every project has its own research process and tools, so it should not be too restrictive or pretend to be all-encompassing.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

The student that looked at digital public space, as explained in question 12.

Interdisciplinarity

21) Do your students participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

PPS is a very interdisciplinary master, students come from various disciplines, each year work together with other organisations. Many students also collaborate after graduation.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

Collaboration between two or more students, which results in the creation of something new by fusing the different skills, can be defined as being interdisciplinary. It is important to not confuse this with mere collaboration where everyone does their own work.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Yes of course. Both theoretical and applied research can be drivers because they offer new perspectives, other ways of thinking. Everything, from writing to thinking and art making, is a practice that drives interdisciplinarity. Because interdisciplinarity explores new terrains, it is a good start to generate new knowledge. But is it not necessarily better than disciplinarity. The problem interdisciplinarity research may have is that it takes a lot of time for participants to find common ground and therefore it risks staying superficial. Research within a discipline may, therefore, dive deeper. Disciplinarity research can dive deeper. Both are valuable in their own way.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

...

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

FHK lacks a framework and needs a research centre that highlights common lines in research projects between the different disciplines and students. An interesting example for interdisciplinary projects could be between the department of PPS and Urban Design, for example. It is important to look into the design of the different research programs to find space for interdisciplinarity. Sufficient time, for example at least 1-3 months, should be reserved for these interdisciplinary projects every year.

INTERVIEW MASTER OF PPS

Interview summary Helen Scarlett O'Neil
alumna @ PPS / Post Master Performing Public Space

General questions

1) Can you describe how typical creative design processes at this master study are organized?

Most of the program is individual and guided by a coach. There are also three bootcamps where students meet physically and collaborate in workshops prepared by a tutor.

2) What are the typical steps that you take during creative design processes within this master study? When/where in these processes is research usually implemented?

First an analysis of the space, the interactions that take place and the interactive options that the space offers, then decide what to change in order to create something new that wasn't there before.

3) What kinds of research methods are taught and practiced at your academy?

A lot of methods are taught, but more importantly, critiquing them too. There is an emphasis on experimentation in public space and fundamental research, body-of-knowledge-research, research into what is already known and what has been done before.

4) Applied research is focused on providing practical solutions to specific problems by analysing empirical evidence. Do you implement applied research as part of your creative design processes? If so, to what extent do you use the findings of applied research in your projects?

Yes, applied research is implemented. Without it there is no basis to respond to public space. Fundamental research is more optional.

5) From your perspective, does applied research deliver improved results in creative processes and products; is it successful and in what ways?

Applied research definitely improves results. It is extremely important to research the context of environments and the interactions between people and to test how to change them through further research and testing.

Research+design process

Framework

6) How do you start up a project in terms of research and what steps do you take to arrive at a certain mindset, a tuning of the brain that allows you to best cope with the assignment?

It starts with a general research question. In coping with the self-assigned assignment, not emotional, but by an analytical mindset. It also means sometimes stepping back and letting the audience do as much as possible.

7) To what extent does the mindset change during the process and because of what?

The analytical mindset doesn't change, but the understanding changes because of all the information from other people.

Approach

8) Are there any planning activities you engage in before starting your research process?

There is no strict planning, more like a basic pattern of structuring based on past experiences.

9) Do you generate a research plan before moving on with the research? If not, to what extent do you think it could be useful to you? If so, what aspects are most crucial to a strong research plan and why?

A time plan is generated, as well as expectations of outcomes during each of the three phases in which the course is structured. However, it is important to realize that it might change. Important for a research plan is to be not too restrictive.

Data Gathering

10) Which methods of data gathering are you familiar with?

Observing, surveying, digital analytics like social media analytics, impressions, in-world-surveys, which is data collection through built-in feedback systems, and soft data collection through open questionnaires.

11) Which methods do you use most often, and is that pre-determined or variable? In case of a preference for certain pre-determined or fixed methods; what do you think motivates your personal preference? In case of variable methods, what informed the choice of method? Can you give an example?

I have a personal preference for observations and in-world-surveys in order to get emotional answers from people. However these methods are not always the best for each project.

Data analysis/selection of findings

12) What do you think makes a 'good finding' in applied research?

Good findings are unique in a body of knowledge context, they are new and can be related to existing knowledge. Good findings are also directly applicable and useful towards current social issues and discussions.

13) How do you select the good findings from all your research findings?

By having done fundamental research to understand what is different and new and by doing in-world soft-surveys to understand what is currently relevant to society.

14) Can you think of ways to reach good findings more directly?

Through practice and experience patterns can produce the right findings, similarities between projects then become apparent. A book with techniques that come from game theory and performance theory and proof of these techniques to work is also very useful.

Implementation of findings

15) To what extent do you think that research findings can alter your position towards the assignment? Can you give an example?

As a result of the findings, the research question changes every stage and is more specific at the end. Findings through fundamental research help to better relate new knowledge to current knowledge. In my personal experience, feelings about the definition of public space have changed as awareness about the differences between physical and digital public space has grown.

16) In addition to generating knowledge on a conscious level, research findings can generate knowledge on a subconscious level. What effects of applied research do you see during the creative process on a conscious level compared to a subconscious level?

A lot of conscious things have become subconscious. Conscious thinking and verbalizing of research has led to more analytical and more critical subconsciousness, which also impacts situations outside the program environment and project following the course.

17) How do you implement the findings in the creative process? Are there any specific approaches to doing so?

Some of the findings are direct input for the performance, others are input for academic discourse. I gave workshops at different symposiums, spoke at the Live Cinema Festival in the UK and was invited by the academic institution to lead workshops there. Findings from my project also resulted in experiments in other, more specific types of digital space, for example creation of artwork for the opening of the digital conference in Austria and virtual recreation of the University of Groningen. During the time at the academy, presentations of the findings to tutors and peers helped to get critical feedback. Eventually, the final product

is not a single performance but a series of performances in public space around the same topic, reflected upon in three categories: personal growth, artistic implications and academic implications.

Improvement of research process and tool

18) Having now discussed your average research processes (and some examples), would you change the way you do/teach research in the future? If so, what would you approach differently and why?

Understanding how patterns work by analyzing beforehand, understand these patterns in a better way and therefore create better outcomes. It is really important to also be able to talk about the process, acquiring the right language that helps to discuss the work.

19) If you would be given a library of applied research tools and activities, to what extent do you think it would help to construct your own, improved research method?

It would be useful to create verbal awareness and ways to understand and articulate elements of the research process.

20) Can you describe one best case; can you give an example of a project/process that stands out in terms of applied research?

Research into the digital public space of Instagram. First, analysis. Then mapping out in flowchart diagrams, demonstrating the differences in efforts between those who create the output and the individuals who respond to it. In physical public space this process and dialogue are more equal and after the response there is no full stop between interactions as how it happens in social media like Instagram. Finally, through game theory you can create a more balanced and continuous way of interacting on Instagram.

Interdisciplinarity

21) Did you participate in interdisciplinary processes and projects with other academies at FHK or elsewhere?

Interdisciplinarity occurs during the bootcamps, because students within PPS come from a variety of backgrounds. There is no interdisciplinarity in the individual research part of the program. Outside of the program, the artistic practice is often much more collaborative.

22) Which interdisciplinary processes and/or projects in your memory do you consider to be the best and why? And which criteria do you think label a process or project as being interdisciplinary?

The bootcamp in the church was my personal favourite, because the whole group was present with many different perspectives and inputs. Workshops were held to understand each other's way of thinking. Everyone would become a leader at different moments.

Interdisciplinarity requires space for equality, giving the floor to everyone. There should be a clash of mediums, but held together by an anchor in the form of a shared purpose. It is better if participants are from different disciplines, but also from different social and cultural contexts, and have different ways of thinking.

23) Do you think that applied research can be a driver in interdisciplinary processes and projects?

Interdisciplinarity enhances processes and applied research enhances processes even further. Collaboration methods have become very important and the assignment and context need to be able to facilitate this within the development of the artistic product.

24) In which interdisciplinary processes and/or projects that you can recall, do you think applied research was most useful and why?

...

25) Do you see any proven research methods within applied research that could facilitate interdisciplinary projects at FHK in the nearby future?

There should be proper time to divide and develop a project, not for too long as the ball should keep rolling. Interdisciplinarity should maybe be prioritized more and not be completely outside of the individual research part. Within this part there need to be bridges to other disciplines, ways to find others with similar academic interests.

PROFILE MASTER OF PPS

ASSIGNMENT	DESIGN PRACTICE + POSITIONING										EXPOSURE		REFLECTION
	framework		approach		data gathering		data analysis		data structuring	concluding	communicating		
activities	activities	tools	activities	tools	activities	tools	activities	tools	tools	activities	activities	tools	activities

key

activities

tools

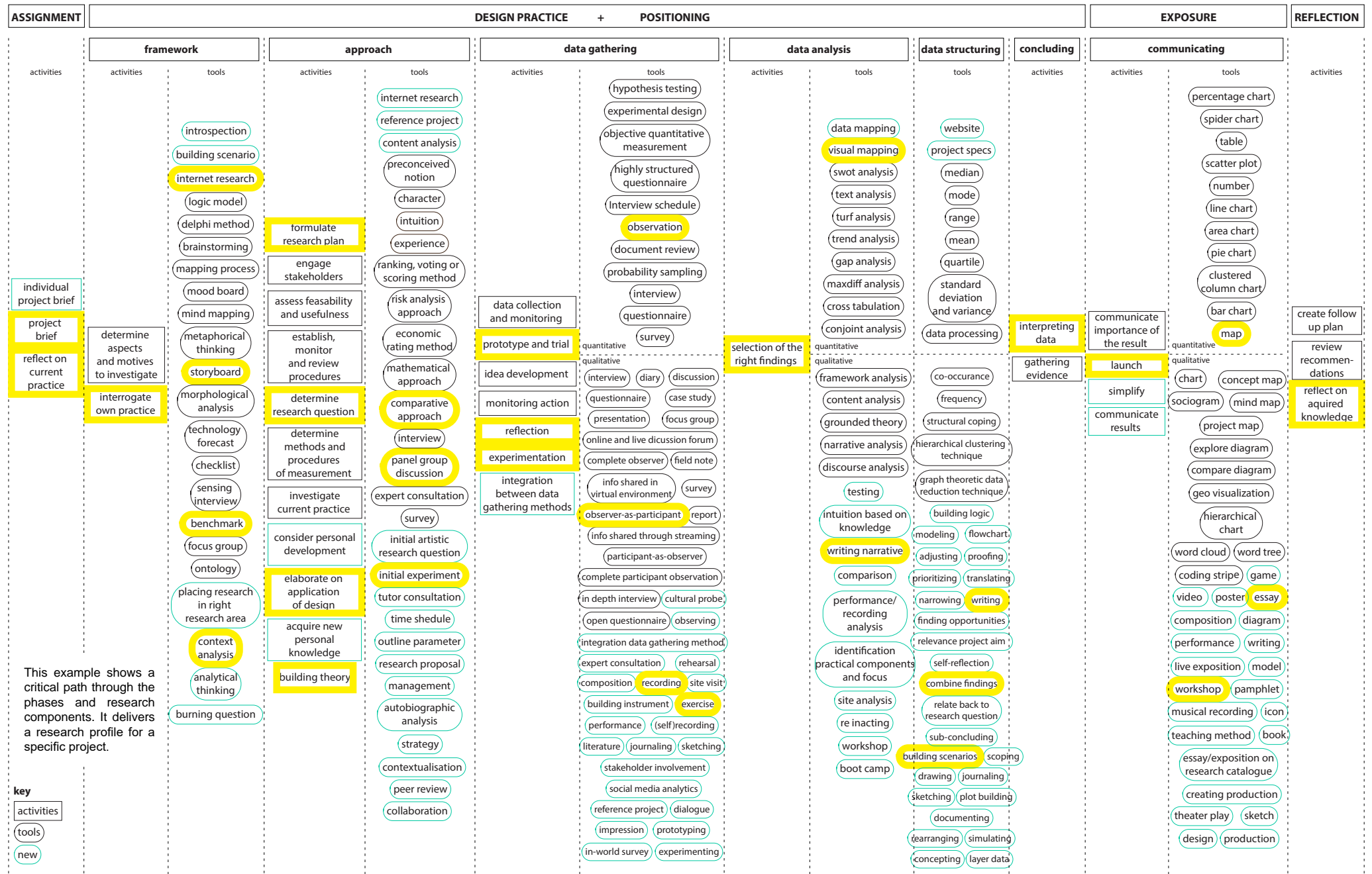
applied

new and applied

FHK TOOL FOR APPLIED RESEARCH METHODS

re/search 63 methods of applied research in FHK master studies / November 2021

EXAMPLE RESEARCH PROFILE



SOURCES

INTERDISCIPLINARITY IN DESIGN

- Dykes, T. H., Rodgers, P. A., & Smyth, M. (2009). Towards a New Disciplinary Framework for Contemporary Creative Design Practice. *CoDesign*, 5(2), 99–116. <https://doi.org/10.1080/15710880902910417>
- Nicolescu, B. (2014). Multidisciplinarity, Interdisciplinarity, Indisciplinarity, and Transdisciplinarity: Similarities and Differences. *RCC Perspectives*, 2, 19–26. https://www.jstor.org/stable/26241230?seq=1#metadata_info_tab_contents
- Nissani, M. (1995). Fruits, Salads, and Smoothies: A Working Definition of Interdisciplinarity. *The Journal of Educational Thought*, 29, 121-128. <https://doi.org/10.11575/jet.v29i2.52385>
- Urbanska, K., Huet, S., & Guimond, S. (2019). Does Increased Interdisciplinary Contact Among Hard and Social Scientists Help or Hinder Interdisciplinary Research? *PLOS ONE*, 14(9), 1–11. <https://doi.org/10.1371/journal.pone.0221907>

INTERDISCIPLINARY RESEARCH

- National Academy of Sciences (U.S.), National Academy of Engineering, & Institute of Medicine (U.S.). (2005). *Facilitating interdisciplinary research*. National Academies Press. INSERT-MISSING-URL.
- <https://ebookcentral-proquest-com.tudelft.idm.oclc.org/lib/delft/detail.action?docID=3377901>

ARTISTIC RESEARCH

- Lilja, E. (2015). Art, research, empowerment: the artist as researcher. <http://www.regeringen.se/sb/d/18297/a/252589>.
- Jochum, R. (2014). Crossing Thresholds: Artistic Practice in Times of Research. In D. F. J. Campbell, E. G. Carayannis, & G. Bast (Eds.), *Arts, Research, Innovation and Society* (pp. 101–123). Springer. <https://doi.org/10.1007/978-3-319-09909-5>
- Toto-Pérez, G. (2010). Art and artistic research. In F. Siegenthaler, T. Wälchli, & C. Caduff (Eds.), *On the Difference between Artistic Research and Artistic Practice* (pp. 30–40). Zürcher Hochschule der Künste. http://www.toro-perez.com/images/books/On_the_difference_between_arAap.pdf
- Hannula, M., Suoranta, J., & Vadén, T. (2014). *Artistic Research Methodology: Narrative, Power and the Public (Critical Qualitative Research)* (New edition). Peter Lang Inc., International Academic Publishers. <https://doi.org/10.13140/2.1.4203.3447>

DESIGN RESEARCH

- Frankel, L., and Racine, M. (2010) The Complex Field of Research: for Design, through Design, and about Design, in Durling, D., Bousbaci, R., Chen, L., Gauthier, P., Poldma, T., Roworth-Stokes, S. and Stolterman, E (eds.),
- *Design and Complexity - DRS International Conference 2010*, 7-9 July, Montreal, Canada. <https://dl.designresearchsociety.org/drs-conference-papers/drs2010/researchpapers/43>
- Downton, P. (2003). *Design Research*. Melbourne: RMIT University Press.
- Buchanan, R. (2001). Design Research and the new learning. *Design Issues*, 3-23. https://rauterberg.employee.id.tue.nl/lecturenotes/DG000%20SCA/buchanan_2001_design_res.pdf
- Frankel, L., and Racine, M. (2010) The Complex Field of Research: for Design, through Design, and about Design, in Durling, D., Bousbaci, R., Chen, L., Gauthier, P., Poldma, T., Roworth-Stokes, S. and Stolterman, E (eds.), *Design and Complexity - DRS International Conference 2010*, 7-9 July, Montreal, Canada. <https://dl.designresearchsociety.org/drs-conference-papers/drs2010/researchpapers/43>
- Smith, H., & Dean, R. (2009). *Practice-led Research, Research-led Practice in the Creative Arts*. Edinburgh: Edinburgh University Press. Retrieved February 1, 2021, from <http://www.jstor.org/stable/10.3366/j.ctt1g0b594>

APPLIED RESEARCH

- Hedrick, T. E., Bickman, L., & Rog, D. J. (1993). *Applied research design: a practical guide* (Ser. Applied social research methods series, vol. 32). Sage.
- Robson, C. (2002). *Real world research: a resource for social scientists and practitioner-researchers* (2nd [rev.]). Blackwell.
- Student perspective: Gray, D. E. (2004). *Doing research in the real world*. Sage Publications.
- Barone, T., & Eisner, E. W. (2012). *Arts based research*. SAGE.

EVALUATION RESEARCH

- Clarke, A., Dawson, R. (1999) *Evaluation Research, An introduction to Principles, Methods and Practice* (1st ed.) SAGE
- Public health Ontario (n.d.) At a glance: the ten steps for conducting an evaluation. Retrieved from: [https://www.publichealthontario.ca/-/media/do/HYPERLINK "https://www.publichealthontario.ca/-/media/documents/A/2015/at-a-glance-10step-evaluation.pdf?la=en"uments/A/2015/at-a-glance-10step-evaluation.pdf?la=en](https://www.publichealthontario.ca/-/media/do/HYPERLINK%20https://www.publichealthontario.ca/-/media/documents/A/2015/at-a-glance-10step-evaluation.pdf?la=en%20cuments/A/2015/at-a-glance-10step-evaluation.pdf?la=en)
- Questionpro (n.d.) *Evaluation Research: Definition, Methods and Examples*. Retrieved from: <https://www.questionpro.com/blog/evaluation-research-definition-methods-and-examples/> "https://www.questionpro.com/blog/evaluation-research-definition-methods-and-examples/"
- Borich, G. D., & American, I. for R. (1971). Evaluative research: strategies and methods. *American Educational Research Journal*, 8(4), 683–683. <https://doi.org/10.2307/1162137>

ACTION RESEARCH

- Hedrick, T.E., Bickman, L., Rog, D.J. (1993). *Applied Research Design: A practical Guide*. SAGE Publications, Inc.
- James, E. A., Slater, T., & Bucknam, A. (2012). *Action research for business, nonprofit, & public administration: A tool for complex times*. SAGE Publications, Inc.
- McNiff, J. (2013). *Action Research: Principles and Practice* (3 ed.). Routledge.
- Mertler, C. A. (2009). *Action Research: Teachers as Researchers in the Classroom*. SAGE Publications, Inc.
- McNiff, J. and Whitehead, J. (2005) *All You Need To Know About Action Research*. London: SAGE (*likely available through loan from other university*)
- McNiff, J. (2017). *Action research: all you need to know*. Sage Publications.

RESEARCH AND DEVELOPMENT

- Akhilesh, K. B. (2014). *R&D Management* (1st ed). Springer
- Kenton, W. (2020, July 5) *Research and Development (R&D)*. Retrieved from <https://www.investopedia.com/terms/r/randd.asp#:~:text=Research>
- Luenendonk, M. (2019, September 18). *Research and Development (R&D) Overview and Process*. Retrieved from <https://www.cleverism.com/rd-research-and-development-overview-process/>
- TOMISCH, M. A. R. T. I. N. B. O. R. T. H. W. I. C. K. M. A. D. E. L. E. I. N. E. (2020). *Design. think. make. break. repeat*. BIS publishers BV.
- Cantamessa, M., & Montagna, F. (2016). *Management of innovation and product development : integrating business and technological perspectives*. Springer. <https://doi.org/10.1007/978-1-4471-6723-5>

QUALITATIVE / QUANTITATIVE RESEARCH

- Creswell, J. W. (2014). *Research design : qualitative, quantitative, and mixed method approaches* (4th ed., international student). Sage.

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METHODS OF APPLIED RESEARCH IN FHK MASTER STUDIES

