17/10/23

INTRODUCTION TO RESEARCH

1. Name of the group and details of the exercise being submitted.

Power Rangers

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1. Write up on Chapter 3

   Reading for Understanding

a) Read the whole article/book once, and summarize the gist of it in a single sentence. Someone who hasn't read the book should understand from that sentence what YOU think the book is all about (the essence - the core message - of the book.)

Chapter three by Mohanan and Mohanan (2021) introduces Conceptual inquiry in the model of research. Conceptual inquiry begins with a question of the form, “What is x?” where x is an abstract concept. The response is a definition of the concept.

b) Now, expand that sentence into a paragraph. Again, in a way that someone who hasn't read the book should get what YOU think is the essence of the book.

Chapter Three: Conceptual clarification by Mohanan and Mohanan (2021); says that Conceptual Clarification raises questions of the form, “What is x?” where x is an abstract concept, in definitions and research questions. The response is a definition of the concept.

These concepts are further clarified by:

Transdisciplinarising them — generalising a concept across different disciplines adding further specifications to narrow it down to the discipline under consideration.

Furthermore, Logical inheritance and Compositionality were also introduced to elaborate a concept and the subcategories in it. Logical inheritance also helps to formulate theories.

c) Formulate a set of questions such that the summary of the book would be the answers to those questions.

- Does one need to clarify the ‘concepts’ that come up in a research question or a definition that introduces a newer concept?
- How can one clarify the said ‘concepts’?
- What is Transdisciplinarising?
- Is there a structure to a ‘concept’?
- Do ‘concepts’ have subcategories?
- How does one specify what premises of a ‘concept’ are necessary and/or sufficient?
- What is compositionality?

d) Drawing upon 1 (a)-(c), write a 2-3 page review that is worth publishing, summarizing what the article/book says, with comments on its strengths and weaknesses.

Chapter three by Mohanan and Mohanan (2021) includes the facet of Conceptual inquiry; which raises questions of the form, “What is x?” where x is an abstract concept, in definitions and research questions. The response is a definition of the concept.

The said concepts may have different categories and may differ across different disciplines. Therefore, it is better to come up with a generalized definition that would apply to all categories/disciplines. This process is called Transdisciplinarising. It is also important to define the transdisciplinary concept.

Now, while coming up with the answer to the question, “What is X?”, where the answer is the definition, we may inadvertently introduce a newer concept in the definition, which would again beg the question, “What is Y?” This endeavor may tell us that, ‘x is a subcategory of y’ and so on and it may be never ending. These subcategories stem from the question, “What is X?”, “What is Y?”, “What is Z?”, and so on and so forth; where ‘X’ is a subcategory of ‘Y’ and ‘Y’ of ‘Z’, are governed by the principle of Logical Inheritance [‘X is a subcategory of Y’ is different from ‘X is composed of Y’]. Basically the fact that the daughter ends up inheriting certain qualities of the mother [The two concepts X and Y share some of the statements/conditions that are there in their respective definition]. Therefore, there is a structure to ‘concepts’. Lastly, Mohanan and Mohanan (2021) spoke of constructing Conceptual Theories with the question of, “What is Democracy?”, where we came across the idea of Thought Experiments.

Keywords: Conceptual Clarification, Transdisciplinarising, Categories, Compositionality, Logical Inheritance, Subcategories.

Some strengths of the chapter are the example of "What is a Square?" under 'Structure of Concepts' which was quite elaborated and easy to navigate through. One weakness was that Compositionality and Sub-category relations were not really differentiated and the boundary between them was vague. Also, navigation through the question of "What is Democracy?" was a little difficult. We believe it would have been better to define 'Democracy' individually apart from the definitions given and then proceed with the scenarios. Scenarios 6, 7, and 8 were the same according to us. A wealthy family and a mafia employ different means of money and violence respectively, there is not much distinction if we think about it.

Reading for Deep Comprehension

a) Read the book again, this time connecting one or more (but not more than five) central ideas (concepts and statements) of the book to what ALREADY exists in YOUR mind (the memory of your experiences, your understanding of what you think you already know, ...).

Central Idea: Conceptual inquiry begins with a question of the form: What is x? where x is a concept. An answer to such questions hinges on a definition of the concept.

Existing Idea: Concept-Based Inquiry is a teaching and learning technique that may be used in any academic or interdisciplinary curriculum from the grades of Kindergarten to Twelfth.

Central idea: Transdisciplinarising a concept is the process of generalizing it across disciplines. This is a strategy that allows us to make connections in knowledge across domains.

Existing Idea: Trandisciplinarising considers all possible domains and explores concepts, issues and problems in order to get a deeper knowledge and better understanding of the real-world experiences. Understanding the world around us is a primary goal of transdisciplinary learning, and that learning should be contextualized in and applied to real-life situations much beyond the traditional idea of "school."

Central idea :Defining a concept

Existing Idea: A concept is a basic mental formation that reflects an idea, thought, or category of anything in our heads. Concepts are abstract entities that serve as the foundation for our knowledge of the universe. They are mental representations of objects, events, or attributes that assist us in categorizing, generalizing, and making sense of the immense quantity of information we receive.

Central idea: Logical Inheritance states that an entity inherits the attributes of the parent entity.

Existing Idea: Logical inheritance is connected to the way meanings are transferred through language. It refers to how the meaning of a word or a phrase may be understood as the meanings of its constituent parts.

Central idea: Compositionality is stated when we say “x is a subcategory of y.” This shows relation between x and y, as in relation between two entities

Existing Idea: Compositionality is a basic linguistic concept that defines how the meaning of complex verbal expressions, such as phrases, sentences, or utterances, may be inferred from the meanings of their constituent elements or components. In other words, it is the assumption that the meaning of a phrase as a whole is made up of or can be anticipated from the meanings of its constituent parts.

b) Ask questions of the form "What is X?" where X is one of the concepts in (2a). Your answer should shed light on the similarities and differences between these concepts and related concepts and analogous concepts are unified. (e.g. what is 'linear' such that 'lines' in your experiential knowledge, 'linear' in linear correlation, 'linear' in 'linear algebra' and 'linear' in 'non-linear dynamics', etc form a single concept?)

1. What is Inquiry?

An inquiry is a systematic process of research or exploration that is often used to gain knowledge, seek information, or get a deeper understanding of a given subject. An inquiry can refer to a formal investigation, an examination, or just a search for knowledge in numerous circumstances. Posing questions, acquiring data, analyzing evidence, and forming conclusions based on the results are all part of the process.

What are Categories?

Categories are groupings or classifications of things, thoughts, or concepts that are used to organize and categorize them based on shared traits or features. They are a basic cognitive and linguistic idea

that people utilize to make sense of the world, simplify complicated information, and successfully communicate.

What is inheritance?

Inheritance is a key idea in a wide range of disciplines, including computer programming, biology, law, and economics. While the precise definition and use of inheritance may differ across several realms, the fundamental concept is consistent: it entails the passing on or receiving of something from one entity to another.

What is Compositionality?

Compositionality is a linguistic and philosophical notion that asserts that the meaning of a complex utterance may be deduced from the meanings of its constituent pieces and the rules employed to combine them. In other words, the meaning of a sentence or phrase can be derived from the meanings of its individual words as well as the structure or combination of those words inside a sentence. Compositionality is a fundamental notion in understanding how language transmits meaning; it enables the production and interpretation of an unlimited number of sentences using a finite set of words and grammatical rules.

Reading for Knowledge

a) Articulate the central claims of the article/book (a single primary claim, with two or three secondary claims if needed. Not more than three.)

In this chapter, Mohanan and Mohanan(2021) talk about the concept of conceptual clarification. The central claim of the chapter is that conceptual inquiry begins with a question of

the form, “What is x?” where x is an abstract concept and the response to this is a definition of the concept. Conceptual inquiry helps us reformulate the research question.

The chapter also talks about another useful strategy for defining a concept, that is transdisciplinarising the concept. Transdisciplinarising a concept is the process of generalizing the concept across disciplines. It is a strategy that allows one to make connections in knowledge across domains. One needs to firstly come up with the "What is x?" form of question and then abstract it in a way that it is generalized to hold across and beyond disciplinary boundaries. Further defining that transdisciplinary concept is necessary in a way that it explains both, what is included as x, and what is not included as x. Addition of further specifications to this definition helps one come up with generalized statements that help clarify the concept

Another claim of the chapter is that logical inheritance shows the relation between the entities. The sub categories derived during transdisciplinarising the definitions of the concept are governed by the principle of logical inheritance. The principle of logical inheritance states that the lower you go in a category table, the entities will show more similar properties. This allows the predictions needed for constructing and evaluating theories to define the concept with the application of the principle of Logical inheritance.

b) Identify and articulate the arguments (proof / rational justification /evidence and arguments) that the author offers in support of the claims.

Several examples have been given in support of the statements put forward. For conceptual clarification, Mohanan & Mohanan (2021) refer to Chapter 1 where the example from discrete geometry is talked about. To explain the concept of discrete geometry, the question "what are bisected lines?" needs to be answered first so that there is a definition of the concept. Another question "what is fabric geometry?" is further asked which helps one make a distinction across domains. In chapter 3, Mohanan & Mohanan claim that to answer the question "What is justice?"

the better idea is to answer the question "What is not x?" or "what is the opposite of x?". Thus the question "What is injustice?" makes it easier to answer the first question.

For Transdisciplinarising a concept, in this chapter, they use the example of species and evolution. The question "What is species?" is formulated in such a way that biological species, chemical species, and cultural species are all instances of species. The question "What is evolution?" should be formulated in such a way that the evolution of the physical universe, evolution of physics, and evolution of regional cuisines are all instances of the process of evolution. Further specifications are made to the derived definition by addition of an example of a child throwing a stone in a tank filled with salted water. The disturbance caused by the stone in the tank resulted in formation of salt crystals, which is an evolutionary change as neither the evaporation of the water nor its cooling resulted in a change but the disturbance caused by the stone did.

Logical inheritance has been explained with the help of the definition of the square. The question "What is a square?" is firstly defined by a combination of various statements which are further sub categorized and then defined as a concept. We get a similar relation between the definitions and the properties shared by the concepts as we dive deeper into the categorization. Mohanan & Mohanan (2021) state the principle of logical inheritance for this example as "A daughter inherits the attributes of the mother", where the mother is the entity polygon and the daughter that inherits its properties is a quadrilateral. A quadrilateral has additional properties which are inherited by its daughter rectangle, and by the principle of logical inheritance the square (daughter of rectangle) inherits all of their properties.

c) Critically evaluate the soundness of the arguments (evaluate the validity of the reasoning and the credibility of the premises).

Mohanan & Mohanan (2021) claim that conceptual clarification can be attained through conceptual inquiry. The clarification of the concept requires answering the question of the form `What is x?", where x is the concept that needs to be answered through a definition. Each of the examples provided to justify this claim seems sound. Although some readers may find it hard to comprehend the geometry due to lack of understanding of mathematics or some people may have math phobia which could hinder their efficient understanding of the concept. Same goes for the example given for logical inheritance. It talks about mathematical shapes and forms which could come off as confusing in a sense that the terms are different for each shape but they share similar properties and attributes.

Transdisciplinarising the concept is explained through examples of evolution and species. The arguments make sense and do help us in understanding the concept of transdisciplinarising but people who do not have knowledge or thorough understanding of these biological terms may find it harder to grasp. Overall the conceptual clarification has definitely been explained thoroughly in this chapter but certain examples could prove to come off as a little hard to comprehend.

d) On the basis of (2), think of additional arguments in support of or against (3a).

On the basis of (2) the claim presented by Mohanan & Mohanan (2021) that conceptual inquiry deals with the question of the form "What is x?" sounds correct. By forming questions of

the form "What is x?", we are able to get a proper definition of the concept which helps in understanding of the concept.

e) On the basis of 3 (a-d), decide whether you should accept or reject (or keep on hold) the claims in (3a).

I accept the claims presented in this chapter by Mohanan & Mohanan (2021). The explanation provided by them for the conceptual inquiry is appropriate and understandable. The question of the form "What is x?" requires an answer in the form of a definition. Transdisciplinarising the concept to create a better definition leads to understanding of the similarities or differences of the concept across domains. The concept of logical inheritance has been explained through a really sound example which makes the concept easy to comprehend.

3. Write Up Research Gym Chapter 3 3.2.4 Defining Democracy

What should we do to make sure there is true democracy in the world? We cannot find an answer to this question without first answering another question:

RQ 3.6 What is democracy? Let us consider the following candidates for a definition:

Democracy (DEF A): a political system of voting to elect the rulers of a country.

Democracy (DEF B): a system in which everyone who is affected by a decision has an opportunity to influence that decision.

It may be possible to define democracy in other ways. But for the purpose of learning how to construct and evaluate definitions to clarify abstract concepts, let us use these two

competitors, and think of our challenge as choosing between them. In evaluating scientific theories, we often need to use the methodological strategies of experimental observations to test the predictions of the theory — to check if the logical consequences of the theory match the results of experiments. In evaluating philosophical theories, such as a theory of democracy, we use a similar strategy: we design thought experiments to check if the logical consequences of the theory match the results of those thought experiments. Let us conduct a few thought experiments.

Scenario 1: Imagine a group of eight friends, who are inseparable. They are always together, whether doing their homework, playing, watching movies, or having their meals. But they do have their individual preferences: two are vegetarian; one hates garlic; three dislike martial arts movies; and so on. Whenever they go to a restaurant, or for a movie, they make sure that everyone's preferences are accommodated. Is this practice of the group a democratic one?

Scenario 2: Imagine a family in which all decisions affecting the children's lives are made jointly by the father, the mother, and the children, through rational discussion, negotiation, and consensus. They jointly decide whether the father/mother should accept a job offer, or a promotion with transfer to a different city; what subjects the children should study, what extracurricular activities they should join, what TV programs they can watch and for how long, and what specialization they choose for their higher studies. Is this practice of the family a democratic one?

Scenario 3: In HW School, all decisions affecting students and their learning are made jointly by the Principal, administrative staff, teachers, and students. If students are interested in learning something that is not currently part of the school curriculum, they discuss it with the Principal and teachers, and if feasible, the school offers the course. Syllabi, textbooks, homework, assignments, and deadlines are negotiated between teachers and students. If there is a discipline problem, a committee of teachers and students figures out a solution, as well as a penalty, if needed. Is this practice of the school a democratic one?

Scenario 4: In SVS School, all teachers and students have equal voting rights. The System works like this. There is one teacher for every ten students. So the children mostly get what they want by voting for them — holidays, food, movies, picnics. If a teacher thinks that learning something is valuable for the children, but the children are not interested, they can outvote the teacher's proposal. Is this practice of the school a democratic one?

Scenario 5: In AVA School too, all teachers and students have equal voting rights. The system works as follows. Every year, they vote to elect the School Administrator (SA) and Assistant School Administrator (ASA). The Principal and Deputy Principal (DP) nominate a set of four candidates. The candidate with the highest number of votes becomes the SA, and the one with the next highest votes becomes the ASA. The Principal and the DP give advice on various matters, but all decisions in the school are taken by the SA and the ASA. The Principal and the DP have the power to fire the SA and the ASA. They also have the power to

renominate the same people for the positions of SA and ASA each year. Is this practice of the school a democratic one?

Scenario 6: Imagine country A where elections are held every five years. There is a large extended extremely wealthy family in this country. Only members of that family are allowed to stand for election. In every election, members of the family are nominated, and the people vote to elect ten of them as ministers. The ministers elect one of them as the Prime Minister. Does Country A have democracy?

Scenario 7: Country B also holds elections every five years. There are four extended wealthy families in the country. For every election, each of the four families nominates ten candidates. The people vote to elect ten of the forty as ministers. The ministers elect one of them as the Prime Minister. Does country B have democracy?

Scenario 8: Country C too holds elections every five years. There are four criminal mafias in the country. For every election, each mafia nominates ten candidates. The people vote to elect ten of the forty as ministers. The ministers elect one of them as the Prime Minister. Does country C have democracy?

Did you judge the practices of the groups in Scenarios 2 and 3 to be democratic? These groups do not resort to voting. So if your answer is 'yes', then clearly, voting is not a necessary

requirement for a system to be considered democratic. How about country C in Scenario 8? If you judged country C to not have democracy, then voting is not a sufficient requirement either. In other words, voting is neither sufficient nor necessary for a system to be democratic. Voting then is only one of the mechanisms designed to implement democracy. If it doesn't achieve democracy, the mechanism fails. What is democracy then? We leave that question for you to chew on.

DEF A states that democracy involves 4 salient features

1. It is a political system
2. Voting is conducted through an electoral process
3. The rulers/position of power and authority are determined through 2.
4. We are specifically referring to a country

DEF B states that democracy involves 2 salient features

1. It is a system
2. Every person who is affected by a decision has the opportunity to influence that decision

Both of these definitions offer very different conceptualisations of what democracy is. To choose between the two, or formulate a brand new definition of democracy, we will consider the 8 scenarios given in the question and try to determine whether they are instances of democracy and justify our answers for the same.

In the Scenario 1 where he group of 8 friends that have varied interests but in group settings everyone's preferences are accommodated by the group, some people believed that the act

of everyone getting to have a say about what is being done collectively is indeed a democratic act but some people believed that democracy would not be considered with subjective needs of individuals but rather the overall welfare of the majority and this is a simple case of accommodation for a harmonious friendship relationship.

In scenario 2, everybody unanimously agreed that the family's practice of working through life decisions was a democratic one. The premise is the same as scenario 1 and DEF B but perhaps the presence of the parents as the honorary "rulers"/representatives of the system makes it feel like it draws some kind of structure even from DEF A which was what prompted the unanimous agreement of this scenario being democratic even though views were divided for the first scenario.

In scenario 3, the HW School's system was also unanimously considered to be democratic because of the equal involvement of all members of the school, and the adequate representation of each sub-group in their decision making. The lack of unilateral decision making by the people in power who consider the feasibility and opinions of the students was what made it easy to categorize as a democracy.

In Scenario 4, regarding the SVS school, where the teachers and students have equal voting rights, the system was mostly considered democratic but also imperfect in its execution due to the issues of representation and equity. The adults could easily get outvoted by the children because of their majority which raised the question of equality vs equity. Equity was determined to have been a fairer system than equality and therefore this system was considered to be a valid democratic system but not necessarily a soundly functioning one.

In scenarios 5,6, 7, and 8 the scenarios almost directly correspond to DEF A of democracy but the overwhelming opinion regarding all of these scenarios was that they did not represent a democratic system. This helps us understand that the symbols mechanism of voting and its features is inadequate for a democracy as all of these scenarios had voting in its system but were still rejected as democracies. For scenario 5, the major criticisms were that the Principal and Deputy Principal nominate the School Administrator and the Assistant School Administrator but have too much power over the directly elected representatives of the school system as they have firing rights and the rest of school has no involvement in the decision making and therefore still works in an authoritarian manner. The problem with scenario 6 was its biased skewed representation of only the elites where the power, autonomy, chance for participation etc only reside with the wealthy family. Even the nomination of the candidates is only restricted to the family. In scenario 7, simply the number of wealthy families has increased but all the other issues of representation, opportunity and fairness persist. And finally for scenario 8 the fact that the mafia families have a monopoly and the fact that they are criminals raises problems of lack of accountability, ingenuity and legality.

So finally what is common in every notion of democracy? We think, the definition of democracy would be so: democracy is a system in which there is an equity in representation of everyone who is included in it, everyone has freedom of expression, the majority consensus prevails, everyone is extended equal opportunity to be represented. The majority welfare and upliftment is given priority and the feature of voting is considered as a flexible feature depending on the size of the population that is considered. Therefore the conclusion we reach is not choosing either DEF A or B but rather an amalgamation of both with some additional features.

4. A detailed description of how you all went about doing your job, especially details of who did what?

Firstly, we all contributed to each and every sub section of the write up together. After our initial agreed upon outlining of the concepts, Reading for Understanding was finalized by Sanidhya Reading for Deep Comprehension was finalized by Palakshi, Reading for Knowledge was finalized by Avantik, and the Research Gym was tackled by Tanisha and Divya

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