A Study on Significance of Concept Mapping in Conducting Research Work

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Abstract

Academe from a wide arena of disciplines to explore complicated aspects of inquiry pursued creative ways. In this literature review, the use of model maps as an exclusive application for leading research was discussed. A broad description of concept mapping was embraced in this research study. For interview analysis concept mapping varies from conventional procedures of text based coding by creating basic cognitive structure obvious and laid emphasis on prepositions sets by which meaning can be constructed by the individuals. The structure of the concept map is consistent with the perceived richness of the interview results. They help by identifying topics for upcoming need to search new information also provide small and quick summary of the interview quality. With the broad aspects of concept mapping researchers are getting enormous opportunities for framing new approaches based on them and also integrate the ones we have already identified.

Keywords: Interview, Concept Mapping, Research Work.

Introduction

To discover the complicated aspects of inquiry researchers constantly look out for efficient and innovative ways to do so. Visual – approaches can be chief methodological tool for organizing and collecting ideas that can be used for research and practice. Butler –Kisber and Poldma in 2010 introduced collage making, Bright man in 2003- mapping and matrices, to assist practitioners and researchers from different disciplines both organizationally and individually these strategies were introduced and to between ideas to visualize these inter-relationships. Visual Organizers generated by computer to help with meaningful comprehension of latest theories by simply posting sticky-notes on the walls during staff meeting's brainstorming sessions; filling white boards with words , circles and lines at research conferences. As per Butler –Kisber and Poldma in 2010 Example of a visual organizer is concept map that can be used in teaching, practice and research in various settings and for meaning making provides a tool.

As per Eppler in 2006, the development of multiple techniques was spawned by the mapping to assess and interpret comprehension of topics that are complex. Few of the approaches are free form, thus gives the participants more space for creativity in their answers. The number of data forms resulted may mean that it is not possible to converse about the classic concept maps, according to Fox, McCormick, Proctor & Carmichael, (2007), for isolating the general characteristics across the data pool it becomes difficult. In order to avoid these, in accordance to the conducting principles utilized In Novak's concept maps, the maps explained here were drawn. A product of research – concept mapping was led by Novak and his coworkers (Novak & Cañas, 2006) FROM past 25 years or so.

Ausubel's (2000) assimilation theory of meaningful earning concept mapping has created explicitly and with the constructivist learning perceptivities it fits properly. To help to alter implicit relations to make explicit connections and to support reflection a tool is provided as per Fisher (2000). To summarize (semi graphic) the complex data collected from interviews this methodology was originally developed, the understanding of the interview data and the qualitative description of concept maps has never been drawn explicitly. As shown by Kinchin, Hay, and Adams, 2000 in the method development that how to explain a certain topic by gauging the cognitive structures that are in mind of the mapper.

Remarking An Analisation

Concept Mapping

Umoquit, Tso, Varga-Atkins, O'Brien, & Wheeldon, in 2013 defined concept maps as a kind of diagram, Wheeldon, (2011)defined it as mind-map, though on basis of authors 'methodological and theoretical orientations further these concept maps are defined. Concept maps were originally used by Novak and Gowin in 1984 to enable meaning full earning in science. Located in a - constructivist deep-thinking orientation, students or practitioners by computer programmer using hands typically designed these concept maps in a way through Institute for Human and Machine Cognition (IHMC) . The way an intellectual or collective individiuals establishes on basis of preceding information to implement fresh concepts in the intellectual schema, this is demonstrated by concept maps. As per Trochim, 1989 through various computer programs concept maps can be generated in which answers are submitted to the questions by the practitioner, researcher or student the schema is automatically generated by the computer program. Therefore how the arenas of inquiry are visually mapped can be understood by the researcher and the practitioner with the help of the schema.

The concept mapping is diverse in the global concepts. As mentioned by Daley (2004) groups and other intellectuals and organizations - Trochim & Kane, (2005); Umoquit, Tso, Burchett, & Dobrow, (2011) for various reasons have been using concept mapping. Jackson & Trochim, 2002, mentioned that for example for organizing responses of the survey for the practitioner and the researcher; concept mapping can be used. (Butler-Kisber & Poldma, 2010) according to them , to organize , synthesize and document ideas in teaching and research these visual approaches can be used as strategies .(Yelich Biniecki & Conceição, 2016) stated that concept maps are useful in engaging mature learners within informal and formal education domain and children in critical analysis byNovak (2010).

(Meagher-Stewart et. al., 2012; Trochim & Kane, 2005), in occupations like health care,Pegg, 2007 – school leadership and (Daley, Canas, & Stark-Schweitzer, 2007) -teaching, therefore to facilitate learning and organize ideas concept mapping has proved to be a significant approach. As a technique, concept mapping was used to teach dentistry students (Edmunds & Brown, 2012) and engineering and technology students by Dixon (2014). According to Trochim and kane (2005) to use funds from a tobacco settlement of U.S.A plan is generated, concept maps were generated by diverse shareholders to frame a comprehensive image of the idea of the cult, development and direct performance planning. As per (Daley et. al., 2007; Dixon, 2014; Hay & Kinchin, 2006; Yelich Biniecki & Conceição, 2016), the concept mapping has been significantly used in teaching, educators use this to demonstrate new ideologies, to demonstrate new learning students have used concept mappingTools **for creating**

Concept Maps

There are few notable mind mapping and concept mapping tools that are available:

WikkaWiki

Designed in PHP, it is a light weight and standards complaint wiki engine for saving pages uses MySQL. It is created for fine-tuned control access, speed, security as well as extensibility.

Free plane

To create electronic outlines and mind maps free plane is used. It supports Free Mind file format and preserves fractional file type compatibility with Free Mind – Free plane. Features are added and does not support tags by Free Mind, while loading which are ignored.

CMAP tools

For the purpose of creating concept maps this tool is used. Florida Institute for Human and Machine Cognition (IHMC) developed CMAP.

Docear

To incorporate an academic search engine, PDF editor and a word processor Docear is used. PDF annotations-comments, highlighted texts, and book marks are imported by Docear .Thus the necessary information of the document can be easily organized in this way. The bookmark or comment itself provides if more Information is required; the page on which the bookmark is pointed directly clicking on it opens the PDF by Docear. Inside a mind map all the knowledge is framed. Inside a mind map information management is further efficient and effective compared to using social tags or basic test.

SciPlore Mind Mapping

The first tool of mind mapping that incorporates mind mapping with relative management. Importing PDF bookmarks is enabled. With file type – FreeMind 0.9. The software is compatible.

Coggle

This is a web based application which uses free ware mind mapping. Hierarchically Structured files, like a diverging tree is produced by Coggle. This distinctions with traditional cooperative editors, like Google Docs, that make available either tabular (spreadsheet) or lined (text document) document types. It will be "free forever "as promised by the author. Coggle allows export to vector PDF and Portable Network Graphics image format.

Free Mind

extensive export capabilities are provided by Free Mind. Tiered set of notions around a principal concept is allowed to edit by Free Mind. It HELPS in devising new projects and out lines. It is a JAVA application and cross platforms supported it is portable and the user interface is same across platforms.

XMind

For capturing ideas, clarifying thinking, promoting team collaboration and for managing complex information this software is used.

MindMup

In accordanbce to the MIT license MindMup Is released with an open source code. Available on GitHub.As a free annoy mouse facility at mindmup.com, MindMup is also available. On various cloud storage providers, comprising of Amazon S3, Google Drive and Git Hub allows users to store maps and with other users to collaborate in real time.

Compendium

The management and mapping of arguments and ideas are facilitated by compendium. It explores thoughts various inter-connections among different ideas and arguments are illustrated by this. For employees to work together in a coordinated manner and by using visual images to convey ideas it is used as a tool.
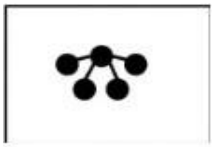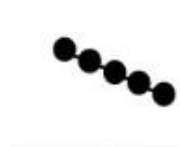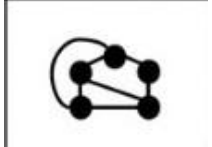
VUE

(VUE) Visual Understanding Environment lays emphasis on creating tools that are flexible to support learning, research and teaching by integrating and managing digital resources. An elastic visual setting for healthy structuring, presenting, and to share digital material VUE is used. Semantic networks of digital assets drawn from local and remote file systems, digital libraries are designed by students and faculties.

Concept Maps And Interviews

For demonstration of understanding concept mapping has a powerful efficiency. To display intellectual knowledge structures to compare the learning process at different stages. As stated by Nesbit & Adesope (2006) the features of concept maps allowed them to be a familiar tool for assessment and promoting learning, also in the arsenal of the qualitative investigator it is a useful tool. For eliciting information and from the background noise foregrounding key points that are within interview transcripts are quite often included for these concept tools are excellent tools. Qualitative and quantitative analysis are supported concept maps, helps in highlighting associations and configurations within the data.

Table 1: Characteristics of the three main morphological types of concept map
(After Hay, Kinchin, &Lygo-Baker, 2008)

	SPOKE	CHAIN	NETWORK
Structure			
Hierarchy	Single level	As many levels as concepts (but of ten these are unsatisfied)	Several justified levels
Additions	Additions to the central concept does not interfere with others	Cannot cope with additions near the beginning of the sequence	Additions and deletions have varying effects as other routes are often available through the map
Deletions	Generally have no effect on the overall structure unless the central (organizing) concept is deleted (which leads to complete collapse)	Disrupt the sequence below the deletion	
Links	Often simple	Often compound (making sense only when the map is read as a whole)	Often rich and complex showing deep understanding
General	These structures indicate 'learning readiness' They are flexible and amenable to change in the Couse of learning	These structures are 'active' They are common to enterprise or to clinical practice here specific sets of actions must be camped out in sequence	These structures are 'scholarly' They often include alterative vies-points and even contradictory ideas

For recording data using a structured approach concept mapping is used, for collecting data this approach has been chosen by the authors by structured research interviews. Both interviewing and concept mapping on the common ground are used to comprehend the complications of the research question by emphasizing on how in a situation the respondents hypothesize it. "Conversation conducted to collect information relevant to research "this definition was adopted at the end and advanced by Brenner, Brown and Canter (1985). Brenner, Brown & Canter again offered the key points in this type of interviewing these are:

At pace and non-alarming tone ask the questions and lay weight on certain words that will aid the participant in understanding the question clearly.

Pay attention to his reply

By using non-directive prompts and probes make sure the respondent answers in full

Recording the answers ,and

Ensure that they have been acknowledged by the interviewer and prompt more nuanced comments-feedback responses.

As mentioned by (Kinchin, Hay &Adams. 2000).Extensive examination of concept maps from the earlier studies was formed by teachers and students of all ages (from primary to post graduate students and researchers) has displayed that their broadly describe their structures as spokes (where all the sub-ordinate concepts are not linked to each other but to the key idea), nets (on all the levels of the concept map several links are present between the

concepts), chains (in a linear sequence all the concepts are arranged) . (Kinchin & Hay, 2007)according to them Taking into consideration the three chief structures of knowledge as a consequence led to description different aspects that are connected to the structural types and the means of developing them as per Hay (2007).

These structural and developmental pathways to comprehension apprehended by the concept map of the author suggest with in the concept map that all concepts are essential, and linking to individual elements by extensive understanding. Generally, chains indicate a goal oriented disposition; rote learning is indicated by spokes, while proof of a profound understanding which can be implemented in new circumstances can be provided by highly integrated networks. Pedrosa de Jesus et. al. (2006) described that the three phases of knowledge development support the three spoke, net and chain known as the knowledge structures. These phases are- a) a specialization phase b) an integration phases c) an acquisition phase. As mentioned by Hay, 2007 across different regions of a specific knowledge structure these phases can be employed therefore it cannot be taken into consideration in isolation with respect to each other. Still, a basic linear progression from a phase to another is not possible to be presumed. As per (Shavelson, Ruiz-Primo &Wiley., 2005) These knowledge structures of mapping by using the interviewee/mapping across various parts of the knowledge structure to show that of these developmental stages which can be used and a" window in to the mind "can be opened .

Reconstituting research interview evidence as retrospective concept maps Into retrospective concept the so interview records were deciphered by the original interviewer, close involvement should be between both the respondent and the interview content. After the interview data is collected as a part of the interview process, the concept mapping is undertaken this is known as retrospective. Reinterpretation of the responses of the people clearly there is a subjective aspect, the links were sufficient enough to be explicated and the concept was sufficiently clear to provide the detail that is necessary.

In interpreting responses, there was one procedural challenge confronting the researcher's image of the corporate infrastructure prior to and during the interviews. How much can be added in the context of the concept map without altering the image as given by the respondent? This component can be incorporated if the respondent presumed that part of the context is understood by the interviewer. Suppose that while answering the questions if the respondent communicated about the media cutting facility of the organization for using (ILS) information and library services. In the answer if the cutting service is mentioned to a more general issue about intelligence sources the connection was not displayed (until in the reply the connection is not made by the respondent). However it was discovered that in the process of their interviews, two of the respondents were not sure of who supplied their press cutting facility.

Four concept maps were constructed by another knowledge researcher using the same data (and on the basis of more nuanced responses). Other than three variations in links and slight variations in the labeling, the interviewer and the other data researcher fabricated concept maps which were almost identical. In terms of relationships and contacts it was totally the respondent's choice of seeking information and how to use it as focus of the work. Interpretation of complex problem and to understand them other potential mapping is needed or subject area under consideration and to variant interpretations gives more scope

Review of Literature

Wheeldon and Faubert, (2009) used participant-generated constructions of expertise in criminal justice, along with follow-up questions of the interview which on basis of concept map were developed. As a useful means these concept maps were used for capturing experiential context cues of earlier experience so find individual respondents and collection of the traditional data is also prompted recalling. For refining subsequent data collection strategies this strategy was useful.

To access the relation saliency of the image attributes associated with legacy, concept maps were used, culture and history, the insights of students who chose an institution of higher education town were shaped by Brandt and de Mortanges in (2011). A personal concept map was created by study participants, using a blank poster, pre – selected card / associations which contains the name of the brand in the center and to connect the cards basic, two and three lines used (the researchers provide them).The cards were placed by the participants with the attributes and with basic, two, and three links were connected. The researchers aggregated the individual brand concept in the second step in order to explain the general understanding of the city brand.

Applicant created concept maps (with the help of a blogging mapping tool in both pre and post) by Xie and Sharma, (2011). All through Sout the semester blogs were written, at least five key words were attached to each post and the keywords were linked in the concept map by nine graduate student participants. By using concept maps the study focused on seeking patterns of participants' including identification and integration, evidence of reflective learning and blogs between the concept maps.

Concept maps were used in public health and community by Meagher-Stewart et.al. (2012) to analyze how the concepts connect, representation of ideas visually, and from the brainstorming sessions to integrate and display information. Brainstorming sessions with public health experts are used to develop visual representations of concepts, to organize and display knowledge and to facilitate consensus-building proposal charts.

Concept maps were used in historical research by Baugh, McNallen, and Frazelle, (2014) to explore, from 1925-1965the history of Mary Breckenridge's Frontier Nursing Service. Current day concerns regarding universal access to health care was investigated in this study using her experience.

Remarking An Analisation

Concept mapping has proven to be an important method for collecting, minimizing and arranging vast quantities of historical information. Graphical illustration of concepts and connections recognized by participant's concept maps were being used by Morrison in 2006, it was an effective tool for clearly understanding the illustration and for presenting the research data. A framework for conducting research was created using concept mapping.

In the study by Leauby *et. al.*'s (2005), to build their individual concept map the candidates were instructed on issue in the question. The participants themselves gave scores from 1 (very weak) to 7 (very strong) for how they felt about each of the concepts in their concept map, upon completion of their concept map.

From individual maps to an aggregate map the historical research findings were presented by Baugh et al. (2014), concept mapping was used to visualize the food projects that are community –based in Ontario by Mount and Andrée in 2013. "Balancing nuance and uniformity" was one of the obstacle faced while presenting data, also simplicity and complexity while presenting data while demonstrating networks visually which let the lines blur quite often between multi-stakeholder and private , non-profit cooperative , governmental and public .

Situations where data requires being scrutinized concept maps were used by Bal, Campbell, Payne, and Pitt, (2010), a fast summary of concept and associations is offered by the concept maps created by Leximancer. With Leximancer, Martin and Rice (2007) and Pendergast, Garvis, and Kanasa (2011) analyzed their records. ''congruence'' was discovered in both the studies by (Pendergast et al., 2011,) Leximancer identified the concept and the rationality of the concepts recognized by Leximancer was proved by researchers.

In data analysis, concept maps were used to visualize the connections among coded categories by Sander, Wilson, Izzo, Mountford, and Hayes in (2012). A single consensus map was created using the findings of the results. To triangulate data and to demonstrate the theoretical structure for the evaluation concept maps were used.

An over the internet mapping app to polish a literature assessment was employed by Vanderheide, Moss, and Lee (2013) to identify the mess and to integrate new knowledge. Some topics were focused on detailed literature, whereas others were only evolving as a consequence of the process.

In the historical research to identify to develop a gestalt data analysis and inter connectedness concept maps were used by Baugh *et. al.*, (2014). Just like a coding system, to understand the relations among concepts and comparison of data between researcher's concept maps were used. Synthesis and interpretation of data happened subsequently in the process with organization and collection of data, throughout the process the researchers communicated the reinterpretations of findings, the

data synthesis emerged when they established associations and connections. Analytic clarity, intellectual rigor and facilitated conceptualization are the advantages found using concept mapping. The understandings of the researchers and the data meanings were described using the maps.

A study by Venkatesh (2020), To investigate the influence of concept mapping on the self-directed learning of secondary school physics students. The study results showed that there is a substantial difference in the mean scores of the experimental group's self-directed learning relative to the control group's students from pre-test to post-test. These findings show that the students of the experimental group who used physics definition mapping have increased their self-directedness in physics learning and been more self-directed learners than the students who did not use the control group. Thus, Idea Mapping enables students to become self-directed physics learners

Discussion

This literature review discusses different fields in the domain of concept mapping, such as public health industries, criminal justice, data analysis and historical study, for the application of concept maps. In a simpler way, concept maps play a significant role in understanding complex issues. In unique conceptual frameworks that guide research, the concept maps are the foundation for their work. By excluding methodological approaches, we can also reduce the possibilities for research. Examining concept mapping methods systematically and then categorizing them provided insights into possible avenues for future implementation and research.

Conclusion

To understand complicated problems in a simpler way concept maps plays a significant role. The definition maps are the foundation of their work in unique conceptual structures that direct study. We can also limit the possibilities for analysis by removing methodological approaches. The concept mapping in research studies was used to analyze and sub-categorize and categorize them so that the reader can check how with the needs of the researcher these approaches can intersect. Within mixed and qualities methodologies concept mapping situated. Researchers get the opportunity to create and build and also by integrating the ones already identified new approaches by using concept mapping.

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Remarking An Analisation

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