Socio-Cultural Factors in Transdisciplinary Research in Arabic Language and Literature

Issah Zubairu Achara[a],*; Abubakar Yusuf Abdullah[a]

[a]Prince Abubakar Audu University, Anyigba, Nigeria.
*Corresponding author.

Abstract

The aim of this paper is to look into factors in transdisciplinary Research in Arabic Language and Literature. The scientific and technological knowledge needed for understanding of these transformations is distributed over a broad spectrum of disciplines and professions committed to incommensurable values, different theoretical concepts and conflicting methodological orientation. Therefore, a strong demand for integrated knowledge has arisen with the aim of improving both explanatory power and usefulness for problem solving. Employing a distinction between three structural levels of discourse a methodological framework for sustainability oriented research is sketched. This paper looks at how transdisciplinary research, which combines knowledge from different scientific disciplines with that of public and private sector stakeholders and citizens, can be used to address complex societal challenges. This includes developing effective response in acute crises, such as the covid-19 pandemic, as well as longer-term solutions for sustainability development. In a series of 28 caste studies, report, it identifies the key obstacles of effectively implementing transdisciplinary research many of these are embedded in the way that research systems are structured and managed and they are amenable to policy intervention. Examples of how various actors, including finding agencies and universalities are adapting to better accommodate the requirements of transdisciplinary research are included in the report and related policy actions are ascribed for these actor.

Key words: Transdisciplinary; Intervention; Complex; Universalities and sustainability.

INTRODUCTION

Transdisciplinary research for sustainability investigates problems on a descriptive, normative and operational level. It not only produces knowledge but empirical syndromes in life-support systems (systems knowledge), it is also expected to produce both the knowledge required about the targets of agency and evaluative principles for analyzing the effects of such agency targets (target knowledge). Furthermore, transdisciplinary research also has to respond to the need for third type of knowledge in the contexts i.e knowledge about the necessary conditions and strategies for changing undesired processes and enforcing desired processes (transformation of knowledge). Given that sustainable development involves societal problem-solving based on research, the knowledge held by non-academic actors has an important role to play throughout the process of knowledge production. A number of focal areas exist within the practice of transdisciplinary that are tied to specific methodological challenges and hence result is different types of transdisciplinary research. The systematical approaches develop general concepts and methods for the ordering form.

The trade-and-negotiate approaches describe research, knowledge production and the development of technologies from scientist with the emphasis on extra-methodical aspect, such as the social factors behind successful transdisciplinary research. Research investigates and reconstructs the social process, in the course of which knowledge has become accepted.

Ultimately what is seen as a good technical solution to a problem in this context is viewed as a successful outcome achieved through "social" forces, such as power, trust, law etc. the learning approaches are target-group oriented and aim to develop actors, problem-solving competencies. It is a question here of working with the actors in transdisciplinary projects, to identify issues of regional relevances and of developing the necessary knowledge and skills to resolve the problems. Thus, a core concern within these approaches is participatory consultancy and development, for which a strong need exists in the context of developmental cooperation and local agenda.

METHODOLOGY OF TRANSDISCIPLINARY RESEARCH IN ARABIC LANGUAGE AND LITERATURE

The sustainable development model and the need for research arising from it was developed out of concern for the threat to life-support system and associated social conflicts arising from the new and ever-increasing uses of nature to sustainable development to use the natural, social and economic life support systems for human welfare in such a way that the contained existence of these life-support systems is not threatened and priority is given to the needs of the poor. In this context "development" includes human activities that are directly or indirectly related to the use of life support systems. While "sustainable" or sustainability describes normative principles or criteria for the evaluation of this activity with respect to its effects and objectives.

What research is expected to do in this context is firstly, to provide an information as to whether and how the global and local changes in natural, social and economic systems affect each other (systems knowledge), it then a question of clarifying what exactly and how concrete use practice should be evaluated from the perspective.

As Ludwik Fleck and Thomas Kuhn pointed out, scientific disciplines build cognitive units based on joint research concerns, theories, models and methods. These are shared by a scientific community as a social unit, which institutionally regulates the collaboration and communication between disciplines as well as the education of the next generation of academics. Disciplinary research is based on the cognitive progress made with respect to the research questions, theories, models and methods, in the area thus described, in accordance with recognized standards and is in the process of increasing specialization. In its observation, description and explanation of phenomena it reduces the range of aspects and possible correlations in the interest of more general knowledge, i.e. knowledge that is independent of temporal and spatial dimensions. What is involved here are idealizations based on simplifying assumptions that are only fulfilled under controlled conditions. Although in many respects the research required on sustainable development needs a disciplinary approach, transdisciplinary research is also necessary because the problems are resistant to the cognitive structures that prevail in the sciences and may be dependent on specific spatial and temporal factors. This is particularly true when it comes to understanding and designing real processes in concrete life-support systems, to which – for the aforementioned reasons – laboratory knowledge should not be applied untested.

As already stated, research for the conservation of life-support systems includes the evaluation and design of use practices from the perspective of sustainability. Thus, in order to fulfil the social need for orientation and action, the information requirement encompasses moral, technical and institutional knowledge. This means that knowledge from the entire spectrum of academic disciplines, i.e. ranging from the natural and social sciences to engineering and the humanities, may be required. This knowledge does not take the form of reliable off-the-peg solutions readily at the disposal of actors in public bodies, business and civil society, because it is knowledge of an uncertain nature. The uncertainties arise for a wide variety of reasons. For example, they can exist at the level of data – data can be lacking and problems can also arise with its quantifiability or interpretation. Uncertainties may also arise as a result of the application of different approaches to the modelling of data in mathematical models.

Problems with the mathematical description of the non-linear dynamics of systems represent another source of uncertainty as does the application of unknown or dubious explanatory principles to the processes in question. Finally, it should be noted that the evaluation of processes, i.e. the determination of their benefits and risks in the broad sense, is not usually unambiguous and involves decisions based on estimations, consideration and appraisals. Thus, in view of competing requirements, action orientations and practices, it is impossible for research to provide clear answers to questions concerning optimum use practices (see Methods for Sustainability

ASSESSMENT: SUSTAINABILITY INDICATORS)

Problems concerning sustainable development cannot ultimately be solved by research, but only in collective life-practice, possibly with the support of knowledge from research – in other words in real experiments. To effectively meet the knowledge requirement for the conservation of our life-support systems in line with sustainable development, the situation of the users of knowledge must be taken into account. To do this, it may be necessary not only to transcend the boundaries between scientific disciplines, but also to open the academic

research process to actors in public bodies, business and civil society and go beyond the purely academic definition, analysis and interpretation of research problems. Whether anything at all – or what precisely – is achieved in the matter of sustainable development is ultimately dependent on the will, knowledge and ability of actors in public bodies, business and civil society from the local to the global level. Will, knowledge and ability influence each other. If understood as commitment, as opposed to mere wishful thinking, the will requires possibilities for action that must be supported by knowledge so that the desired effects can be achieved.

Thus, research and social and economic processes develop mutual interdependencies. Research in the form of an expertocracy should not replace political decision-making in the context of economic and social matters, nor should research be entirely instrumentalized by political interests. Research is responsible for the knowledge bases necessary to find decisions that do justice to the poor and to future generations, political responsibility, however, is in the hands of the political actors. To be able to fulfill its research tasks, science must be related to political problems without, however, allowing itself to become an instrument of party politics.

This variety of problems, participants, interdependencies and expectations makes transdisciplinary research for sustainable development a highly diffuse matter when viewed from the outside. As a recent venture which emerged with the awareness of the risks faced by modern society, transdisciplinary research sometimes is more strongly based on promises than proven concrete achievements. In the remaining sections of this paper, the complex and contested field of transdisciplinary research will be explored and systematized from conceptual and methodical perspectives. While it is possible to make a distinction between different types of transdisciplinary research, it is not, however, possible to present a general paradigm.

Typology of Transdisciplinary Research in Arabic Language and Literature

Transdisciplinary research is a broad, colorful, and highly contested field. The label "transdisciplinary" can be found attached to the most wide-ranging projects. This is due to the variety of problems dealt with by transdisciplinary research, the different expectations with respect to the research and the heterogeneity of the participants from science and practice involved in this research. Thanks to the diversity arising from these factors, transdisciplinary research lacks the precise elements that underlie the strength and performance of disciplinary research: transdisciplinary research does not form a cognitive unity based on the common research issues, theories, models, and methods shared by a scientific community as a social unit. Co-operation

and communication are regulated on a project-related basis and, as a general rule, they do not outlast the context created by the project. The next generation is trained "on the job" and thus the training remains closely linked with personal experience which, because of professional mobility, is seldom passed on and is also seldom systematized. In the context of research subsidies, applications which serve the systematization and development of concepts and methods have had little chance of success up to now, unless they were developed within the framework of special programmes. The task of transdisciplinary research can be defined at different levels. Transdisciplinary research can, firstly, be related to the dialogue between science and society and to the implementation of the results of scientific research. Thus it concerns communication with society. Secondly, transdisciplinary research can be related to reflection on processes in society and the economy and is therefore located at the level of studies. Between these lies the level of problem-related and integrative research which is concerned with both the description and analysis of processes and with action strategies. These tasks may differ, but they can often – and should – be complementary.

A single definition of transdisciplinarity cannot do justice to this variety. A normative definition, which prescribes the use of the concept, will be based on an arbitrary onesidedness. The use of such a definition may be unavoidable in a concrete research context; however, it is not legitimate as a general definition. As opposed to this, a descriptive definition which takes into account the wide-ranging use of the term and identifies the common features from the diverse elements is not very informative. In fact, these common features are largely restricted to the integration of various disciplinary perspectives in transdisciplinary research, which provides the basis for the distinction between transdisciplinary research and multi-disciplinarity as a set of different and unconnected perspectives on a common theme. Different views already exist on the following issues which are frequently cited in definitions of transdisciplinary research (see Unity of Knowledge and Transdisciplinarity: Contexts of Definition, Theory and the New Discourse of Problem Solving, see Unity of Knowledge in Transdisciplinary Research for Sustainability):

* whether or not transdisciplinary research aims to achieve a holistic view of the problem being studied (holism);

* whether or not it relates to real-world problems (i.e. problems external to science) (problem orientation or issue orientation);

* whether or not it involves actors from non-scientific fields (participation);

* whether or not it primarily serves the implementation of research results and the development

of concrete solutions for practice (practical knowledge);

* and, finally, whether repeated cyclical modification of basic observations in relation to research issues, study methods and interpretation concepts arise in the course of the research (process nature of research).

These issues are not, however, generally identified as the defining features of transdisciplinary research and are not exclusively applicable to transdisciplinary research.

Due to the lack of a common paradigm for transdisciplinary research which would provide a basis for an adequate definition and systematization of the research area with respect to conceptual and methodical perspectives, the range of approaches in transdisciplinarity is organized here in the form of a typology. This typology takes account of the different contexts in which research is carried out on a transdisciplinary basis. It also takes into account that transdisciplinary research involves a problem of unity on three different levels: the cognitive level of the knowledge system, the social level of the research community, and the level of the competencies of the individuals involved (see Unity of Knowledge in Transdisciplinary Research for Sustainability). Of necessity, the three types set one-sided perspectives among the above-listed features of transdisciplinary research. The typology does not provide a crystal-clear and comprehensive classification; such claims do not make sense in an emerging field like transdisciplinary research for sustainability.

The general aim of research for the sustainability transition is to understand the interactions between socio-economic and technical systems, on the one hand, and environmental systems, on the other hand with respect to their evaluation and transformation according to the sustainability model. Therefore, it is possible to identify different focus areas among the systematicity approaches. The focus may lie, firstly, on the understanding of the origin and development of the problem, i.e. systems knowledge. The "syndromes of global change", for example, model the genesis and dynamics of developments, which are deemed as overtly unsustainable and derive the transformation knowledge required for the avoidance or transformation of such developments from the identified functional dependencies. Transdisciplinary projects may also have target knowledge as their central focus as is the case, for example, with "embedded case study methods", which focus on the evaluation of existing action options in regional issues and to do this refer to pertinent systems knowledge. An approach on the global scale addressing climate policy is the "Tolerable Windows Approach" (TWA), which is used in a project on "Integrated Assessment of Climate Protection Strategies" (ICLIPS). Besides, there exist various methods for sustainability assessment (see Methods for Sustainability Assessment: Sustainability Indicators). If the focus is on transformation knowledge, the problem definitions

and research questions are about activities of the society to fulfill basic human needs and the corresponding technologies, such as nutrition, transport, housing and others. There are approaches in this line that develop the substance flow analysis in transdisciplinary directions by integration economic and social aspects in the analysis. Other approaches are based on theories of action in social sciences, as it is the case with the "integrative concept of sustainable development", elaborated at the Helmholtz Association of German Research Centers, and the "need-field approach" of the Swiss Priority Programme "Environment".

They focus on collective and individual options for a more sustainable fulfilment of human needs, taking into account systems knowledge and target knowledge.

The "Science and Technology Studies" (STS) describe transdisciplinary research projects, knowledge production and the development of technologies from the perspective of an observing (social) scientist. They are described as "trade and negotiate approaches" hereafter, because the emphasis is on social factors for successful transdisciplinary research, encompassing the cooperation of experts from various disciplines as well as the communication with stakeholders. "Trade and negotiate" is the label for how interactions and processes, in the course of which "socially robust knowledge" emerges, are analyzed. The claim is that successful collaboration neither needs a shared paradigm among researchers nor a consensus among stakeholders about how things are and should be. Instead, participants are said to interact with their proper set of practices and meanings at a mainly metaphorical level in addressing the common boundary objects (a "boundary object" is a common material or abstract object to which the different disciplines in a project refer to). Socially robust knowledge, that is technologies or practices, which are developed by "trade and negotiate" approaches, requires that the social forces (such as power and trust) are made explicit and are included equivalent to technical factors or natural forces into the process of problem solving.

TYPOLOGY OF APPROACHES IN TRANSDISCIPLINARY RESEARCH FOR SUSTAINABILITY

Systematicity Approaches
    Context academic research
    Focus science-oriented
    Aim concept and methods for transdicipinary research
    Level concepts and methods for analysis level concepts and methods for analysis and synthesis
    Challenges to design a knowledge system including system knowledge from various disciplines that is reliable for real issues.

TRADE AND NEGOTIATE APPROACHES

Context science and Technology studies

Focus production and forming of knowleges and technology and technologies.

Aim consequences of knowledge and technologies.

Level: social intentions and implications

Challenges to organize setting for social robust knowledge.

LEARNING APPROACHES IN ARABIC LANGUAGE AND LITERATURE

Context development cooperation, local agenda

Focus: actor-oriented

Aim: mutual learning of an exerts and practioners/ actors

Level: competencies of an individuals

Change: to contextualize knowledge and commitments.

Of the three types, the systematical approaches are most closely related to the classical cognitive objective of an academic research in that they involve the systematization of knowledge, i.e. a method and conception based cognitive unity of knowledge approaches in the tradition of general systems theory and model the complex interaction of a multitude of parameters in certain regions problem area as it is the case with the "syndromes of global change". Transdisciplinary Research in Development cooperation origins and paradigms or in the earth system as a whole "earth system analysis".

SUSTAINABILITY, ARCHITECTURE, AND TRANSDISCIPLINARITY

The processes of producing the built environment involve the use of natural materials, the consumption of energy, and localised impacts on habitats. The cumulative result of these short-range activities is that more significant long-range impacts, environmental and others, only become fully apparent to future generations, with implications for sustainability. This demands an understanding of the social, economic, technological, juridical, and other dynamics and mechanisms which are required to transform the existing built environment to a more sustainable state. The evaluation of the built environment for sustainability conceives it as a dynamic scenario; as the 'product' of urban planning and architectural design processes, and various construction activities which occur in defined spatial settings. The multi-dimensions of sustainability are interconnected in a way that makes the analysis of this 'product' complex (Brandon and Lombardi, 2011).

There is presently no transdisciplinary language across the built environment that links the diversity of interests necessary to assess the diverse impacts. In evaluating the built environment for sustainability, the disciplines involved bring their own classification systems and techniques to the problem and they are generally inflexible in considering the views represented by others due to the lack of a common vocabulary or a systematic methodology which allows for productive dialogue. The task therefore, is to find an integrating mechanism to aid decision-making processes in planning, design, construction and management of the built environment. The ability to design holistic solutions within the complexity of the built environment requires close inter-working between the professions, hence the need to overcome the disciplinary constraints of current education and research. Opoku et al. (2015) further emphasize the role of appropriate leadership in driving the sustainability agenda; as well as the need for inter and transdisciplinary approaches to research to drive the needed change, in both academia and practice, towards a sustainable built environment.

DISCUSSION: IMPERATIVES OF TRANSDISCIPLINARITY

The imperatives of transdisciplinarity as the key response to the sustainability challenge in the built environment are three-fold, namely: (1) global environmental issues as drivers; (2) benefits and prospects of transdisciplinarity; and (3) barriers to transdisciplinarity.

ELEMENTS OF TRANSDISCIPLINARITY

The paradigm shift towards transdisciplinarity is driven primarily by the' 1mminence of global environmental problems which impact the built environment. Globalization climate change, demographic dynamics, and environmental degradation are current examples of problems with a new kind of structure (Hummel, 2008). Such hybrid problems are characteristically marked by a high degree of complexity in terms of causation ranging along spatial, temporal and social scales: from local to global; current events to long term effects; and from action in everyday contexts to policies of global regimes and multinational organizations. Dealing with these complexities requires an informed process of decision making and intervention to ensure that society's capacity to act is increased' in a sustainable manner and its knowledge base deepened and broadened. New approaches and forms of knowledge production, capable of adequately grasping the complexities, are required.

Most environmental problems transcend the borders of any particular discipline. Moreover, many of these have global or seemingly remote origins, thus demanding broader views of the built environment than the conventional styleor movement-based perspective. The conceptualization of the built environment which focuses on the aesthetics of form and space, to the exclusion

6r broader social, cultural, economic, ecological, and political issues, will no longer suffice. Transdisciplinary research as an emerging field of research in the knowledge society relates science and policy, and is increasingly being used to address issues such as: migration, new technologies, public health; violence, poverty, and social change. It thus complements basic and applied research in the socially relevant problem fields and those characterized by complexity and uncertainty (Klein, 2013).

Policy problematics such as those relating to climate change, vulnerability, resilience, and disaster management, require the collaboration of diverse disciplines to undertake analysis and develop solutions. There is an academically-driven and policy-related imperative for the 'hard' and 'soft' sciences to collaborate (Simms, 2011). It is therefore apparent that there are multiple pressures on the built environment disciplines to engage in transdisciplinarity (Newell and Bull, 2009).

BENEFITS AND PROSPECTS OF TRANSDISCIPLINARITY

Disciplinary research has some obvious benefits: it is specific, specialised and detailed; it combines the views of experts in the same field; and gives elaborate answers to specific questions. However, research on complex issues requires that knowledge on different subjects and expert views from different disciplines be combined. This underscores a shift away from a focus on discrete disciplines of knowledge with their own theories, language and problems, towards an interest in the productive relationships between disciplines. This is uniquely relevant in the built environment research over-arched by sustainability issues, in which problems in architecture, economics, ecology, law, planning, psychology, politics, sociology, or urban design may have to be tackled simultaneously, and disciplinary research often fails to capture the whole picture.

Transdisciplinary research offers significant intellectual benefits in terms of methodological perspectives, critical analysis of conventional assumptions, and invaluable knowledge exchanges between disciplines (Klein, 2013). Although interdisciplinary research engages researchers from different fields, it may not capture the holistic dimensions of the built environment or consider all relevant stakeholders as much as transdisciplinary research, which has the capacity to address multiple issues simultaneously (Salama, 2007). It is therefore expedient for existing multi-and inter-disciplinary studies on the sustainable built environment to be linked into trans-disciplinary settings in which researchers from different disciplines interact with a variety of stakeholders, such that economic, environmental and social policies can reinforce each other instead of working at variance.

Moreover, that the built environment disciplines are potentially open to other disciplines in the natural and social science domains constitutes an opportunity for fostering transdisciplinarity. Salama (2007) for example, argues for trans-disciplinary thinking in affordable housing research and the integration of varied knowledge types into housing practices. Also, Geographical Information System (GIS) is increasingly accepted across a wide range of subject areas. Jones et al. (2009) for example, present the case of GIS-space syntax collaboration. Space syntax which was developed in the field of applied architectural research (Hillier, 2008), and the more place-sensitive GIS were integrated within a single theoretical-methodological model, implying a dialogue between the disciplines.

Transdisciplinary research provides valuable societal interventions and is normally conducted in the form of projects, and by temporary teams assembled for the purpose at hand. The goal is to have a practical effect beyond science. Transdisciplinarity produces both scientifically validated knowledge and pragmatic knowledge usable in practice. Researchers in many fields, including architecture, are therefore advocating more integrative approaches, which incorporate multiple methods from diverse conventional disciplines. The benefit is clear: each method of conducting research brings with it unique strengths and inherent weaknesses; hence combining methods provides appropriate checks against the weakness in each, while simultaneously enabling the advantages to complement each other (Groat and Wang, 2013).

BARRIERS TO TRANSDISCIPLINARITY

There are two broad sets of barriers to the adoption and application of transdisciplinary research approaches, namely: epistemological boundary problems and institutional bottlenecks (Petts et al., 2008). Epistemological barriers include ideological differences in approaches to knowledge; issues of disciplinary identity; structure and culture of distinct disciplines; and enduring disciplinary traditions in terms of ontology, problem-framing, methodology, and theory or frames of reference. institutional barriers include: lack of communication between disciplines and the need to establish a common language (Bracken and Oughton, 2006). Others are: division of labour between disciplines: lack of training for transdisciplinary research; career advancement systems; research and educational funding mechanisms; institutional practices; journals' publication procedures, differences in writing styles, refereeing processes, inadequate peer review and regulation of the professions.

At its core, transdisciplinarity is characterized by integration problems: epistemological, social, communicative and technological. Bruun et al. (2005) identified seven barriers to interdisciplinary research, which may very well apply to transdisciplinarity. These

include: structural impediments, lack of knowledge [unfamiliarity with other disciplines), cultural obstacles (differing assumptions, practices, ethics and language), epistemological distinctions (divergent disciplinary world views), methodological differences, psychological factors (attitudes and disciplinary identity), and reluctant reception (lack of understanding of the value of inter-disciplinary research by non-scientiiic audiences). Despite these challenges, transdisciplinary approaches provide integrative and synthetic means of addressing complex questions which are often situated at the interfaces between disciplines, and which cannot be captured satisfactorily by a discrete discipline.

FINDINGS

• Those who are teaching Arabic Language and Literature are not a specialist in Arabic Language.

• The Teachers of Arabic Language are not following the syllabus, and methodology of teaching Arabic Language.

• Those who studied Arabic Language at secondary school, when they go to tertiary institution, the change to Islamic studies.

• Parent's attitude towards their children in studying and learning Arabic Language.

• People's attitude towards studying Arabic Language.

• Those who are teaching Arabic Language don't have background of Arabic Language.

• Arabic Teachers lacked of knowledge of Computer.

• Arabic Teachers are not speaking Arabic Language with their pupils/ student, they speak English Language.

SUGGESTIONS AND RECOMMENDATIONS

• Government should provide language laboratory to various school in Nigeria.

• Adequate Arabic Textbooks should be supply to secondary schools and Tertiary Institutions in Nigeria.

• Government should supply computer to school in Nigeria from primary level to Tertiary institutions in Nigeria.

• Arabic Teachers must have knowledge of computer.

• Government should employed Arabic Teacher into various schools in Nigeria.

• Those who will teach Arabic Language must be a specialist in Arabic.

• Arabic Teachers suppose to be speaking Arabic Language with their student in the classroom or outside classroom.

• Arabic Teachers should organize a quiz competition, to motivate the students

• Government should try to build a mosques in the various schools, most especially Arabic Schools in Nigeria.

• Government school purchases a vehicle that will be conveying pupils in Nursery and primary schools in Nigeria.

• All Arabic students should be speaking Arabic Language with one another.

• Teachers should organized National conferences on the importance of learning and teaching Arabic language in Nigeria.

CONCLUSION

What research is expected to do in this context, is to provide an information as a whether, and how the global and local changes in natural, social and economic systems are related to use practices, and whether and how changes in the different systems affect each other (systems knowledge). It then is a question of clarifying what exactly sustainable development means and how concrete use practices should be evacuated from the perspective of sustainable development. The information is also required on how use practices improved and how their implementation can be better regulated (transformation of knowledge).

Causal knowledge i.e. empirical and theoretical knowledge, is required to enable the description and explanation of processes in the life-support systems and how they related to use practices. In many cases, it is not possible to meet. This knowledge requirements through disciplinary research.

REFERENCES

Annerstedt, M. (2010). transdisciplinary as an inference technique to achieve a balter understanding in the health and environmental Science. *Int. J. Environ. Res. Public Health, 7*, 2692-2707.

Barry, A., Born, G., & Weskalnys, G. (2008). Logic of interdisciplinary. *Economy and Society*, *13*, 20-49.

Benkari, N. (2013). "The sustainability" paradigm in architectural education in UAE. *Procedia-Social and Behavioral Sciences, 102*, 601-610.

Brandon, P. S., & Lombardi, P. (2011). *Evacuating sustainable development in the built environment* (2nd ed.). New York NY: Wiley-Blackwell.

Brundtland, H. (1987). *Our common future.* Oxford University Press, for the world commission on Environmental and Development.

Chetliparamb, A. (2007). *Interdisciplinary a literature review.* University of Southampton, Southampton.

Collins, K., & Son, R. (2009). Editorial living with environmental change. Adaptation as social learning. *Environmental Policy and Governance*, *19*, 351-357.

Commoner B. (1971).*The Closing Circle*: *Nature, man, and technology*. New York: Bantam Books, Inc..

Evans, R., & Marvin, S. (2006). Researching the sustainable city,

three models of interdisciplinary. *Environment and Planning A., 38,* 1009-28.

Feldmand, R., & Westphal, L. (1999). Participatory design in support of empowerment: The greening of a public housing. *Places, 12,* 34-37.

Groat, l. N., & Wang, D. (2013). *Architectural research methods* (2nd ed.). New York. N.Y.: John Wiley & Sons,

Harris, J. (2002). The Case for cross-disciplinary approaches in international development. *World Development, 30*(3), 478-496.

Hummel, D. (Hg) (2008). *Population Dynamics and Supply System. A Transdisciplinary Apporach.* Grankfurt am main, New York.

Hunt, J., & Shackley, S. (1999). The reconceiving science and policy academic fiducia and bureaucratic knowledge. *Minerva, 37,* 141.

Klein, J. T. (1990). Interdisciplinary History, Theory and practice. Wayne State University Press Detropt Michigan.

Klein, J. T. (2004). Interdisciplinary and Complexity and evolving relationship. *Emergence, Complexity and Organization, 6,* 2-10.

Klein, J. T. (2013). The transciplinary moment (um). *Integral Review, 9*(2), 189-199.

Lawrence, R. J., & Despres, C. (2004). Futures of transdisciplinary. *Futures, 36*(4), 397-405.

Lomas, K. J. (2010). Carbon reduction in existing buildings, a transdciplinary approach. *Building Research and Information, 38*(1), 1-11.

N/A, (2016). *Annual Report of the 5th Annual General Assembly and Conference Nigeria Institute of Architects,* 23-26 November, pp. 29-31.

Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science: Knowledge and the public in an age of uncertainty.* Cambridge: Polity Press.

Okoku, A. A., Ahmed, V., & Cruick Shank, H. (2015). Leadership, cultural and sustainable built environment. *Built Environment Project and Asset management, 5*(20).

Petts J. Owens, so, & Bulkeley H. (2008). Crossing boundaries, interdisciplinarity in the context of urban environment. *Geoforum, 39,* 593-601.

Polimeni, J. M. (2006). Transdisciplinary research moving forward. *International journal of Transdisciplinary Recreating integrated knowledge McGill Queens*. University Press Montreal.

Stanek, L., & Kaminer, T. (2007). "Introduction-Trans-disciplinary" The singularities and multiplication of Architecure" Footprints. *Delft School of Design Journal Autumn*, 1-5.

Tognoli, J. (1987). Residential environments. In D. Stokols and I. Altman (Eds), *Handbook of environmental psychology* (Vol. 1. pp. 655-690).Wiley, New York.

Wood, A., & Oxley, D. (2007). Learning through collaboration an industry/School of architecture partnership. *BEBE Transaction, 4*, 76-88.

Wickson, F., Carewa, A. l., & Russell, A. W. (2006). Transdisciplinary research. Characteristics quandaries and Quality. *Futures, 38,* 1046-1059.