A Transdisciplinary Framework for L2 Teachers of the 21st Century

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Abstract

Basareb Nicolescu states that Transdisciplinarity "concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines" (Nicolescu 2014: 187). He further explains that "transdisciplinary is ... distinct from multidisciplinarity and interdisciplinarity because of its goal, the understanding of the present world, which cannot be accomplished in the framework of discipline research". (Nicolescu 1999). Transdisciplinary approach is especially important in secondary ESL classes because it facilitates a shift from the process of teaching to the process of learning, and it eventually makes learners more independent and confident. In a world of unprecedented rapidity of growth and development in all fields like science, technology, etc., issues of myriad nature and multiple facets rise up and the learners need a new approach that seeks to find a solution for these newly emerged problems. Children in a transformational phase need a curriculum and a framework that consider their needs, aspirations, interests and opportunities. Transdisciplinary approach merges different approaches to learning and promotes much better understanding of the complexities of the world and prepares learners for the 21st century requirements.

Key Words: transdisciplinary, 21st century skills, meta-cognitive learning, educational framework.

Introduction

The main problem with the current education system is that it relies mainly on one discipline alone, or one approach alone. Curriculum, Educational Framework and Instructional strategies are made on the basis of precepts of this single discipline. In a fast changing world, no knowledge can be assumed to be compressed to a single discipline. The modern era is marked by globalization, technological advancements and growing instances of migration, and only an educational system which transcends all the disciplinary boundaries alone can solve many of the problems currently existing or newly evolving. A transdisciplinary approach is the need of the hour, as it provides open and flexible learning environments. Transdisciplinary approach is a fusion of many theories and approaches in such a way that each one transcends the other with a view to achieving a holistic perception of knowledge construction. A transdisciplinary approach allows a globally open approach and finds a solution for issues related to sustainable development, curriculum reframing, individual refinement, and the very questions of living and existing in the 21st century. Learners of secondary schools need a curriculum which proposes going beyond the disciplinary constrains as they can easily adapt to the most relevant developments. So we need a curriculum which promotes multiple perspectives, creative mindset,

critical thinking, divergent constructs and intercultural competence. Only a transdisciplinary approach can provide a scope for such a curriculum.

Defining Transdisciplinarity

The transdisciplinary Framework presented here is based on the foundational proposition of the Douglas Fir Group (2016). The main objective of the proposed Framework is to enhance learning in the 21st century through a problem solving approach making use of the schematic expanses and socio-cultural awareness. Its primary objective is to ensure the participation of the learners in a wide range of activities- social, cognitive and emotional. It also aims at promoting the learners' awareness of their roles in shaping and expanding their personal and cultural repertoires for creating their own worlds and others'. This will be attainable only when different disciplinary perceptions are combined in such a way that they move out of their disciplinary boundaries at the same time.

An approach is usually framed based on certain theories and concepts specifically associated with a particular discipline. Each approach has its own concerns, perceptions and objectives. Research methods are adopted based on these principles and they propose new hypotheses. But second language learning poses a number of challenges which are complex and varied. For addressing these issues, perspectives and theories based on a single disciplinary framework may be inadequate.

A Transdisciplinary approach can be defined as an approach that does not entirely depend on any one discipline, but transcends disciplines in order to construct new layers of knowledge by the process of unifying different knowledge layers proposed by different disciplines. The approaches and pedagogical stances in Indian classrooms have been proved inadequate and inappropriate, since they fail to respond to the major issues of the teaching-learning processes currently in use. The curriculum and the syllabus should consider the incorporation and judicious synthesis of classroom experiences with real-life experiences. Learners should be made aware of local and global concerns and be trained to cope up with these issues in a creative and effective way allowing the gathering and fusing of information from various sources, whatsoever are available for producing novel outputs and constructs that can be adopted to respond to all the socio-cultural and individual issues. A transdisciplinary approach totally dispenses with the idea of conducting inquiries based on established canonical procedures.

Purpose of the study

The purpose of this qualitative study is to describe how a transdisciplinary approach can be effective in the contemporary world of digital domination, and scientific advancement that create a number of complex problems. This description focuses on how disciplines are interconnected, why the approaches currently in use fail to solve complex problems, and how a transdisciplinary approach can contribute to better understanding of the world through collaborative co-operation. This study will observe transdisciplinary approach among secondary teachers and secondary students. The study also focuses on how a transdisciplinary framework can effectively contribute to the second language acquisition.

Statement of the Problem

Adopting a transdisciplinary framework in secondary schools is a new issue in India. It is inevitable that the application of the new curriculum should be understood and studied through researches and studies. If proper planning before implementing the transdisciplinary framework is not appropriately executed the learners will be ultimately affected. There is the risk of it being ineffective or incomplete. Hence a thorough analysis and a detailed study is needed and the transdisciplinary framework is to be accurately defined. Second language learning faces a lot of challenges and no approach so far has been proved completely effective in solving the issues of second language learning. Since the 21st century poses complex issues that cannot be solved with the disciplinary knowledge, a transdisciplinary approach can be implemented in second language instruction. But thorough discussion regarding the strategies to be employed in tune with the transdisciplinary approach is yet not materialized.

Research Objectives

1. To identify and explore the underlying factors that impact learning in the 21st century.
2. To assess the features of the approaches currently in use and to analyses how they are inappropriate to deal with the students of the 21st century
3. To forecast the implications of a transdisciplinary approach to facilitate learning in secondary schools in India.
4. To propose recommendations to use a transdisciplinary framework for 21st century school curricula.
5. To suggest how a transdisciplinary approach can foster second language learning among secondary school children in India.

Research Questions

The main research question is :

To learn how applying a trans-disciplinary approach can be introduced in the Secondary School curriculum, especially in second language instruction, different research questions were developed.

They are:

1) How is the current approach different from a transdisciplinary approach?
2) What are the strategies that can be used to promote 21st century skills?
3) What are the variables that affect the learning in the 21st century?
4) What are the differences in students' achievement level when implementing transdisciplinary approach?
5) How can a transdisciplinary approach solve the issues related to second language learning.

Significance of the study

The study is significant to the researcher and the teachers of the Secondary classes, since it throws light on the new strategies that can be used for promoting better instructional practices and for developing an awareness about effective approaches facilitating better learning environments. It is one of the pioneering studies conducted to examine the need for a paradigm shift in the secondary school education to include a transdisciplinary approach for accommodating the latest trends that prepare the learners for the 21st century challenges.

Many studies related to the different approaches to be adopted in the school curriculum in India were conducted, but few were based on the changed perspectives of including a transdisciplinary approach was conducted. More researches are needed to clarify the benefits and challenges of the Transdisciplinary Framework. This research may encourage further researches in the field.

The study is also significant because it proposes a new framework that can facilitate proper learning by exploring the possibilities of cognitive, meta-cognitive and socio-affective strategies. Optimum learning achievements will be made possible only when the different disciplinary perspectives are meaningfully integrated and collaborative team work is ensured. The study analyses various factors that impact second language learning and may help teachers to design and implement effective learning strategies based on the suggestions put forward by the present study.A transdisciplinary approach can find a solution for issues related to disciplinary limitations. The present study may help teachers to use the transdisciplinary approach to enhance learning process.. The departments may take initiative to conduct training programmes for teachers. Moreover, if proper study is made regarding the practicability and usefulness of the new approach, curriculum design may be based on it. Further, the study may evoke the researchers to do more studies on using this approach in developing other skills like listening, speaking and writing.

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Literature Review

Transdisciplinarity emerged as a response to the need for an integrative approach that transcends the disciplinary constraints. The term 'transdisciplinarity' was thought to be first used by Jean Piaget, Erich Jantsch, and Andre Lichnerowicz who used it during the workshop, 'Interdisciplinarity: teaching and research problems in universities' organized in France, According to Piaget, transdisciplinarity implies a "higher stage succeeding interdisciplinary relationships […] which would not only cover interactions or reciprocities between specialized research projects, but would place these relationships within a total system without any firm boundaries between disciplines" (Piaget 1972: 138).. Some scholars attribute it to Bohr. There are people who associate transdisciplinarity with Paulo Freire's "Pedagogy of the Oppressed".

Halliday defines transdisciplinary approach as an approach which is " thematic rather than disciplinary in their orientation." He believes that transdisciplinarity aspiresto transcend the boundaries of disciplines and generate knowledge that is more than the sum of a discipline-specifc collection of fndings (Halliday, 1990/2001)The prefix 'trans' implies nature of going beyond and across. Transdisciplinary approach refers to "that which is *across* the disciplines, *between* the disciplines, and *beyond and outside* all disciplines. It traverses all possible disciplines."(Sue L.T. McGregor). According to Rosenfield (1992) transdisciplinary comprises drawing together "concepts, theories and approaches, from the parent disciplines."

The concept of this new model of knowledge construction gained popularity especially in 1990s and researchers found this approach useful to find a solution for the growing complexities of the real world issues. In 1994, the Charter of Transdisciplinarity was adopted in The First World Congress of

Transdisciplinarity held in Portugal. The Zurich International Transdisciplinary Conference held in 2000 underlines the significant role of\transdisciplinary approach in solving complex issues.

The transition from the disciplinary approach to a transdisciplinary approach was necessitated by the fact that disciplinary perspectives do not adequately address the complex issues which have multiple dimensions and which are usually interconnected. Basareb Nicolescu gives a detailed explanation how multidisciplinarity, interdisciplinarity, indisciplinarity and transdisciplinarity are different from one another. Multidisciplinarity implies 'the incorporation of the perspectives of several disciplines.' (Nicolescu, 2014). According to him, Interdisciplinarity 'concerns the transfer of methods from one discipline to another.' Both the multidisciplinary approach and interdisciplinary approach overflow disciplinary boundaries but their goals remain limited to the framework of disciplinary research. Indisciplinarity denotes the transgression of disciplinary boundaries and it denies the use of any disciplinary methodology and hence it is rather anarchical.

To a certain extent, interdisciplinarity advocates a synthesis of different disciplinary perspectives. According to Klein interdisciplinarity is "the process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline or profession". "Taking a transdisciplinary approach is quite different from simply merging two or more interdisciplinary approaches, which can sometimes fail to identify important differences in value and epistemology. Transdisciplinary approaches move from a problem outward without interest in concretizing any one discipline's value system, theory, or research perspective, but rather creating a unity of new knowledge developed of theories from across disciplines. This approach is exactly what is needed to address the complexity of factors surrounding bilingual learners." (Weimer, et al, 2019) Transdisciplinarity complements multidisciplinarity and interdisciplinarity, but at the same it goes beyond the confines of disciplinarity. Transdisciplinary approach includes the phases like 'collaborative problem identification and framing; interdisciplinary integration, co-creation, and problem analysis; and incorporation and application of produced knowledge and results.' (Gabriela Tejada, et al, 2019)

It is wrongly conceived that things can be understood on the basis of disciplinary principles. But it rather restricts our understanding of the reality. Knowledge does not confine to disciplinary boundaries, but transcends the epistemological restrictions of disciplinarity. So many researchers argue that for better understanding of the world and for more effective solutions for complex issues of the 21st century, disciplinary boundaries should be transgressed. It is here that Basareb Nicolescu's three conceptual pillars that support transdisciplinarity become more relevant. According to Nicolescu the three conceptual pillars are : complexity, levels of reality and the logic of the included middle or third. The principles of complexity are important in the 21st century education as they answer many of the questions related to the modes of interconnectedness required for understanding the world better. The idea of the levels of reality gains significance when the problems to be solved require different perspectives and principles. The logic of the 'included middle' addresses the issues related to how to practically face emerging challenges with new and creative thinking processes. (Nicolescu, 2002). He further explains that "The new production of knowledge implies a necessary multidimensional opening of the process of learning: towards civil society; towards cyber-space-time; towards the aim of universality; towards a redefinition of the values governing its own existence." (Nicolescu, 2013).

Transdisciplinary approach visualises the learner as an active participant in the construction of knowledge. It proposes a new kind of intelligence that combines the faculties of the mind, body and

feeling. It promotes looking at a problem from different angles. It encourages the learners to produce diversity of constructs. It offers openness of exploration without being confined to any disciplinary principles of precepts. Transdisciplinarity allow "the unification of meanings that traverse and lay beyond different disciplines" (Nicolescu, 2008, p. 263). It is "the unity of knowledge beyond the boundaries of specific disciplines" (Knyazeva, 2011, p. 194).

Christian Pohl (2011) speaks of four features of transdisciplinarity:(a) to relate to socially relevant issues, (b) to transcend and integrate disciplinary paradigms, (c) to do participatory research, and (d) to search for a unity of knowledge. Understanding the complexity of the issue is important while dealing with an issue that is socially relevant. For this all the diverse perspectives connected with the issue need to be considered. Combining multiple disciplinary constraints can contribute to a kind of 'Perspectal Universality" (Sunder Rajan,1998). Learners engaging in collaborative participation of knowledge construction become researchers. Here the learner accommodates knowledge gained from other disciplinary domains and constructs new knowledge.

"The problem with modern disciplinary thinking is that it fails to realise that its claim to universality needs to be relativized by recognizing the significance of other disciplines in gaining multiple perspectives about the world to which both one's as well as another's discipline contribute. (A.K.Giri, 2002) . he further explains that the nature of transdisciplinarity to be completary to one another makes the field of knowledge "a fertile one, nurturing varieties of cross-fertilisations" and used "for liberation and unfolding of potential." (A.K.Giri, 2011).

According to Joseph E. Brenner, there are three forms of transdisciplinarity: Theoretical transdisciplinarity, Phenomenological Transdisciplinarity and Experiemntal transdisciplinarity. "The theoretical transdisciplinarity focuses on a general definition of transdisciplinarity and a well-defined methodology. The word Phenomenology implies connecting theoretical perspectives with observed experimental data which can be used for predicting further results. Experimental transdisciplinarity is connected with performing experiments following a well-defined procedure, justified when it results in an acceptable level of reproducibility to the scientific community." (Brenner , Joseph E, 2014, p.13) . But for Baserab Nicolescu reducing transdisciplinarity to a single aspect is dangerous. He believes that a plurality of transdisciplinary models can unify all the three forms.

According Byrd Clark, "transdisciplinary approaches envision alternative ways of thinking and doing language learning and teaching." (Julie S. Byrd Clark, 2016). This is in tune with the proposals of Douglas Fir Group (DFG). It is argued that integrating multiple disciplinary perspectives can help working on 'real world' issues. Rosenfield (1992) also has similar views when he says that transdisciplinary is a methodology that comprises drawing together "concepts, theories and approaches, from the parent disciplines."

The relevance of a transdisciplinary approach in second language learning is emphasised by DFO (2016) who clarified " A transdisciplinary perspective on language learning and teaching, on the other hand, helps SLA recognize that its object of inquiry, bi/multilingualism, which is partially shared with many other disciplines, is a complex, ongoing, multidimensional phenomenon that involves, as we have proposed, the dynamic and variable interplay among a range of individual neurobiological mechanisms, cognitive and emotional capabilities, and peoples ' diverse experiences in their social

worlds. In the case of second language learning, only a transdisciplinary aapproach, combining all the different approaches can solve the real issues of L2 acquisition because "transdisciplinary approaches envision alternative ways of thinking and doing language learning and teaching." (Julie S. Byrd Clark, 2016). It encourages learners to attempt different levels of enquiry. It is generally argued that pedagogies in transnational times need to focus on fluid or 'in-transit' relationships between different disciplines and different kinds of meaning making, rather than attending solely to static linguistic systems, isolated vocabulary, and rules of grammar (Canagarajah, 2011; Kramsch, 2015)

Students of the present century need a curriculum which incorporates the 21st century skills such as 1)Learning skills, 2) Higher-order thinking skills, 3) Life and career skills, 4) Multiple Fluencies, 5) Specific Literacies 6) Awareness and Analysis skills, 7) Meta-cognition and 8) Deeper Learning Skills. The main objective of having a shift in the curriculum and syllabus is to prepare the secondary school learners to face the challenges and issues that emerge out of the unprecedented developments in the field of technology and science. In a document published by The North Carolina State Board of Education five major skills are identified for preparing the learners for success in work and life in the 21st century. (*Arts Education and 21st Century Skills in North Carolina*). They are :

1.Flexibility and Adaptability (adapting to varied roles and responsibilities)

2.Initiative and Self-direction (monitoring one's own understanding and learning needs and going beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities)

3.Social and Cross cultural Skills (Working appropriately and productively with others and bridging cultural differences and using differing perspectives to increase innovation and the quality of work)

4.Productivity and Accountability (Setting and meeting high standards and goals for delivering quality work on time)

5.Leadership and Responsibility (Using interpersonal and problem-solving skills to influence and guide others toward a goal and acting responsibly with the interests of the larger community in mind)

A transdisciplinary approach alone can help learners transcend the traditional learning styles and instructional strategies for making the learners of the 21st century fit for facing the challenges of the time.

There are a number of factors that influence Second language acquisition and the challenges are varied. They are usually related to individual and social factors such as age-related issues, the learners' cognitive and affective development, the meta-cognitive components, the socio-cultural backgrounds, etc. Since second language learning is a highly complex process which depends largely on the learners' linguistic and socio-cultural diversities, a solution to the multiple issues cannot be practically found in one or two disciplinary perspectives.

The transdisciplinary approach is important because it assumes that Knowledge cannot be confined to any particular discipline. Transdisciplinary approach "seeks to transcend the boundaries of disciplines and generate understanding by unifying the many layers of knowledge about L2 learning and deriving coherent patterns and configurations of findings across domains, across time periods and across

different levels of details." (Hall, J.K. 2018). A transdisciplinary approach is problem-oriented in the sense that it seeks to find solutions to the issues and concerns by adopting and adapting and eventually unifying the salient features and methodologies relevant to the solution of the problem and by doing so it dispenses with the idea of relating to any particular disciplinary structure. According to The Douglas Fir group L2 learning is an 'ongoing process.' The Douglas Fir Group speaks of three levels of activities : the micro level, the macro level and the meso level. During the micro level of social activity a person uses all the available semiotic resources and frequently engages with others in specific multilingual contexts using his neurological mechanisms, and cognitive and emotional capacities to expand multilingual repertoires. These contexts are situated within and shaped at a meso level. The meso level is concerned with the various sociocultural institutions, communities and organisations such as family, school, clubs, etc. It is in such social institutions that an individual's identities are formed. Here the particular types of social experiences are either restricted or accessed. The meso level significantly determines the individual's socio-cultural interventions."The macro level is concerned with the ideological structures about language and learning that influence institutional expectations and the ways that individuals and groups view their worlds and act within them." (Hall, J.K. 2018)Each level depends on and complements one another. They exist only through constant interaction with each other. Second language acquisition is influenced enormously by these . The following figure explains it in detail.
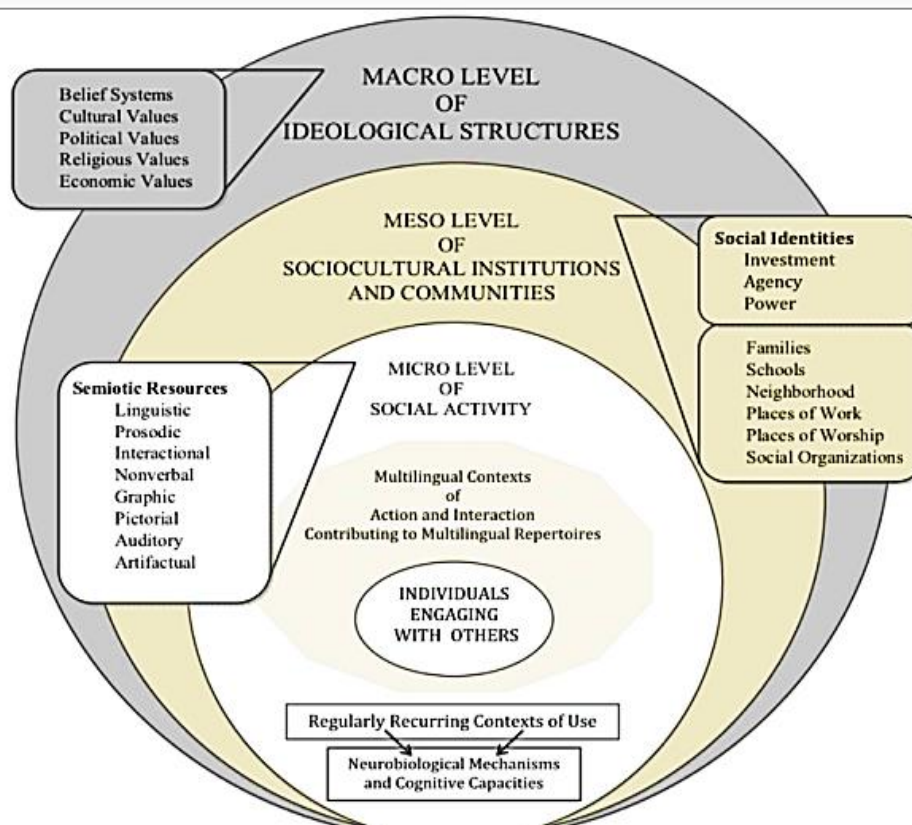
(Douglas Fir Group 2016, p. 25)

Figure 1. The Multifaceted Nature of Language Learning and Teaching.

According to J.K.Hall, there are eight themes about language and learning. The first theme explains that knowledge is complex and dynamic. He seeks to estaablish that knowledge is not a fixed system

of abstract structures. It is a "massive collection of heterogeneous constructions, each with affinities to different contexts and in constant structural adaptation to usage" (Bybee & Hopper 2001, p. 3,). In this context, 'constructions' imply all linguistic phenomena. It is a known fact that language learning is facilitated by the way in which we experience and interpret the world around us. There are several factors that directly or indirectly contribute to the language development. Interactions of internal cognitive-emotional capacities, sensory systems, domain-general cognitive processes, etc. play a vital role in language development. Attention, perception, memory and motivation belong to the cognitive-emotional capacities. The sensory system help us to know the outside world, thereby facilitating linguistic accomplishments.It is also interesting to note that learning a second language changes the way our senses work together for interpreting and producing speech. According to Victorian Marian, a professor at the Northwestern University, "…language experience can change sensory perception.'

The second theme that Hall speaks of is that language is a repertoire of diverse semiotic resources. In order to understand and use language in contexts, one has to use both verbal and non-verbal resources. There are also visual, electronic and artifactual modes of resources that facilitate language acquisition. So the more diverse the learner's experiences, the more diverse the repertoires will be.

The third theme is connected with social interaction. The learner acquires second language depending on the opportunities he is provided with for interacting in social contexts of formal and informal situations. The language development mainly depends on the varied experiences a learner gets to interact in social contexts and also on the recurrence of these experiences. This enriches the learner's repertoires.

Hall's fourth argument is that 'learning is mediated and embodied.' Second language takes place in a context when learners make use of the verbal and noverbal cues given by people in the immediate context. Even those in remote access also can influence language learning. This kind of language socialisation can help the learners draw a link between the semiotic resources and their schema, encouraging them to use and reconstruct their contexts of use (Vygotsky 1981&1989, Ochs & Schieffelin 2017).

As the fifth theme, Hall presents the idea that L2 learning is mediated by learners' social identities. The social group into which the learners are born influence language acquisition. In all micro-, meso- and macro- levels of interaction, the learners take on different roles and the methodas and styles of interaction are different. Zimmerman (1998) defines this as *situated identities* and Gee (2017) defines it as *role-relational identities*. According to Gee (2017) identities are determined and defined by the activities one engages in and the distinct and divergent roles one takes on in different situations. It is to be considered that the development of online social spaces and opportunities has increased the diversity of contexts for interaction. Joan Kelly Hall further explains that "the proliferation of digital technologies such as computers, video games, smart phones, and the internet, has changed the ways in which L2 learners interpret and make meaning, with graphic, pictorial, audio, and spatial patterns of meaning integrated within or even supplanting traditional spoken and written texts." (Hall, 2019) Another type of identity that widens the learner's semiotic resources is the imagined identity which assumed when the learner is led by the belief that better resources will be offered to him.In his sixth theme, Hall clarifies how motivation, investment and agency complement linguistic accomplishments. The seventh theme directly related to learning. According to Hall learning is mediated by literacy and instructional practices.

It is here that the transdisciplinary approach becomes relevant. In order to provide the learners with a variety experiences, an approach that depends solely on one discipline becomes insufficient. A singly disciplinary approach focuses on specific knowledge structures that do not allow provisions for multiple methods and strategies.

What could be learned from all these literature reviews is that learning a second language becomes easier and more effective when diverse media is integrated into the teaching- learning materials and instructional strategies. Texts should be modified and different materials such as graphic organisers, various multi-sensory cues, dramatization, etc. can be used in the instructional practices. Learning thus becomes interesting and enjoyable, and the cognitive load becomes reduced.

The literature of recent times proposes a number of transdisciplinary frameworks. They all make attempts to maintain an interface between research and practice. They promote the concept of knowledge co-production. The transdisciplinary framework thus proposed contribute enomously to the understanding of transdisciplinarity and to the advancing of these for further researches.

Point of Departure

The present study takes the points discussed in the literature review on transdisciplinary approach as a point of departure for largely considering the pedagogical implications of a transdisciplinary approach in promoting second language learning and in fostering 21st century skills among learners. It is important to note that adopting a transdisciplinary approach in transacting the integrated curriculum definitely promotes the discovery of new knowledge layers that promotes linguistic accomplishments. Such a study may lead to more interesting studies and approaches to second language learning. A transdisciplinary framework is what both the teachers and students require today as it gives wider scope for expansive explorations into deeper knowledge layers not restricted by any kind of disciplinary constraints. The researcher is hopeful that such a study might contribute to advancing an instructional framework that provides opportunities for deeper conceptualisation for language teaching and learning in the transnational times.

Methodology and Theoretical Framework

Design

This is a qualitative study focusing on a naturalistic inquiry as informed by Pattons' (2002) definition. It adopted a method which involved surveys with questionnaires and workshops conducted for teachers and . The data were collected through surveys, semi-structured interviews, discussions and classroom interventions.

Participants

38 teachers from different schools in Kerala participated in the survey. They were teachers of English teaching in secondary classes. They were selected based on convenience sampling. The participants included teachers from different socio-cultural backgrounds and they were 24-50 years old. The majority of teachers had post graduation in English Language and Literature. All of them had their Bed. in English. The researcher obtained consent from all the participants before the study started in accordance with research ethics.

Instruments

In order to collect data related to the effectiveness of implementing a transdisciplinary approach in ESL instruction considering the needs and aspirations of learners in the 21st century, the researcher employed survey questionnaires, observation checklists and flexible interview protocols. The questionnaire was used to assess the participants' perceptions of second language teaching approaches and instructional strategies. Observation checklists were used to evaluate the classroom approaches and strategies used by the participants based on which feedback could be given. A two-day workshop was conducted to familiarize the learners with the proposed framework and its features.

A thorough discussion based on the responses to the questionnaire was conducted and clarification was given in an interview conducted. The researcher obtained permission from the participants to observe simulation classes arranged to get a better understanding of the strategies used in ESL classes based on the approaches currently adopted. It gave the researcher an overall idea about the needs and benefits of conducting a workshop for teachers for giving an in-depth idea about the need for a paradigm shift and about the features of a transdisciplinary approach. The result indicated that they had no prior knowledge about transdisciplinary approach. The workshop was conducted and observation and feedback were given in order to improve their teaching quality and to give an insight on how to plan lessons based on which classroom strategies could be effectively planned and implemented. The checklist used at the end of the workshop consisted of items related to the pedagogical implications of the transdisciplinary approach. The strategies used in the workshop were based on the principles of the transdisciplinary approach proposed with a view to familiarising the participants with the use of these strategies in the classroom successfully. It was intended that the workshop might help the participants gain a thorough knowledge about the transdisciplinary approach through experiential involvement.

Discussions and Findings

The result showed that there was significant positive change in the attitude of teachers towards implementing a transdisciplinary approach in second language instruction. There was remarkable improvement in the understanding of the participants about how a transdisciplinary approach can make learners more knowledgeable as they are encouraged to draw concepts from different disciplinary domains. Since the transdisciplinary approach unifies the principles of different approaches to learning, the instructional strategies could become more effective to serve the purpose. It also made the participant gain insights about how depending on single approaches may be insufficient and inappropriate in a context when learners need to be trained to develop 21st century competencies. The participants became familiarized with the different features of transdisciplinary approach and were directed to analyse the transdisciplinary framework proposed for second language learning in the 21st century classrooms. Although initially many were unwilling to accept a new pedagogical approach, they became convinced that a transdisciplinary framework in ESL classrooms can solve many of the issues related to second language learning.

Conclusion

The present study reveals that teachers possess fairly good knowledge about a few approaches and instructional strategies that can make second language learning easier and effective. But their

perceptions were restricted to disciplinary knowledge layers. It could also be understood that there is a relationship between teacher's perceptions and academic achievement of the learners. Within the educational context, the teacher's role is great in developing a transdisciplinary methodology and the learners achieve a transdisciplinary learning. The teaching activity, if properly planned and suitably structured, can provide effective learning experiences. So, it is important that the teacher has to first develop the transdisciplinary mindset. The advent and development of transdisciplinarity demonstrate emerging ways not only of organizing but thinking about knowledge and inquiry in a world that has become 'too big to know' (Weinberger, 2011)However, the present study is not able to make an indepth knowledge about the likely impact of the transdisciplinary approach on learners in real classroom situations. The study encouraged the learner to propose a transdisciplinary approach to second language acquisition. A transdisciplinary framework is proposed herewith.

It was Douglas Fir Group (DFG) that first proposed the Transdisciplinary Framework in the field of Second Language instruction. All the 15 scholars belonging to different approaches to second language teaching proposed the transdisciplinary approach as a solution for the existing problems of current education. This system makes a study of different factors that affect the comprehension and production of linguistic elements in the multi-cultural and multi-lingual contexts. It is not a new approach that negates the existing approaches and disciplinary influences in acquiring second language, but rather an approach that considers and promotes constructive engagements with many disciplinary perspectives and approaches that provides new spaces for a creative fusion of multiple perception, vantage points, divergent prospects and genuine outlooks.

The transdisciplinary framework being advanced here is in tune with the proposals posited by Jacques Delor (1996). It implies a "conceptual framework that draws together concepts, theories, and approaches from the parent disciplines" (Rosenfield, 1992, p. 1351). It is a learner centered, problem-solving and process-oriented approach that promotes collaborative engagement in the meaning-making process. Learners work in groups, use meta-cognitive practices and make decisions using the concepts gained from different disciplinary domains. Such a framework helps children develop the 21st century competencies like creative thinking, critical evaluation, communication, information media and technology skills. The framework also promotes independent learning styles, analytical skills, participatory engagement, innovative perceptions, in sightful revelations, and multiple mental constructs which are necessary for second language learning.

According to Basareb Nicolescu, transdisciplinarity in education helps learners to maintain equilibrium between the analytical intelligence and the intelligence of feelings. What we need today for the 21st century learners is a curriculum that integrates cultural, scientific, social and spiritual repertoires. A transdisciplinary Framework can contribute effectively to the unified use of all disciplinary knowledge structures and insights, but transcending the disciplinary limitations at the same time.

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