# TECH-KNOWLEDGY: DEVELOPING 8TS ITERATIVE CYCLE MODEL OF ANDRAGOGY IN VIRTUAL LEARNING ENVIRONMENT FRAMEWORK (VLEF)

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## ABSTRACT

e-learning in Virtual Learning Environment Framework (VLEF) requires a person / learner to be self-regulated and using andragogical models for technology mediated tools and strategies named as tech-knowledgy. The purpose of the study was developing a model for teaching and instruction to facilitate the life-long, continuous and self-regulated learners in formal, informal and non-formal open and flexible Virtual learning environment. The objective of the study was Tech-knowledgy i.e. developing 8Ts model for the paradigm shift from pedagogy to andragogy in ICT-integrated teacher and higher education in Pakistan and all over the world.

The study was qualitative in nature and the methodology used was critical discourse analysis of teaching models used in teacher and higher education all over the world. The result and conclusion of the study was based on the findings and thus a model was developed by the researcher having 8Ts: Transformation, Teaching, Tutoring, Technology, Tools, Treatments, Testing and Transfer to complete the teaching cycle, the model was named as 8Ts Iterative Cycle Model.

The model was recommended for teaching and instruction as an andragogy in Virtual Learning Environment Framework (VLEF) at teacher and higher education level.

**Keywords:**

- Pedagogy
- Andragogy
- Tech-knowledgy
- Virtual Learning Environment Framework (VLEF)
- ICT-use
- Teaching Model
- Teacher Education
- Higher Education
- Epistemology in ICT

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**INTRODUCTION**

Swinging the pendulum of pedagogy and andragogy in Virtual Learning Environment Framework (VLEF); the knowledge (information) is developed from its base (mean position) within ZPD in a subject or discipline to wisdom (peak of knowledge) on either extreme.

When one vibration is completed an iterative cycle is produced and the existing knowledge (information) of the person is transformed to new information with resulting creativity and capacity to develop and transform it to more meaningful and contextualized wisdom and skill (competency) within ZPD in his/her life space and community of practice: learning and teaching context.

This iterative cycle is in turn concentrically developed to higher and diverse forms (inter-disciplinary, multi-disciplinary and trans-disciplinary) when the individual is using modern tools of ICT and the resources available in Open and Flexible Virtual Learning Environment Framework (VLEF) with self-regulated learning and andragogical strategies or practices.

The Transformation of knowledge from real to virtual learning; Teaching and coaching (Tutoring) with the means of Technology (ICT or non-ICT) and Tools for interaction & communication with teachers, tutors and experts more knowledgeable others (MKOs).

The engagement of the individuals in learning situation with self-regulated and Andragogical strategies / practices present a solution to his/her problem (Treatment) in given context and community. The individual uses Evaluation and Testing: Objective and Subjective in order to validate and make it more reliable and receiving feedback (reinforcement). After validity and reliability of the transformed knowledge and developed new skill and competence, there is transfer and utilization of the cognitive and psychomotoric learning (competence) with attitude to contribute in the society and community of practice; as a consequence; there is research and productivity with value addition in a given or existing field, discipline or subject.

The iterative cycle of andragogy with its swinging pendulum from pedagogy to andragogy in the transformed new knowledge is continuous and the research is carried out to produce, generate, Transform and develop the existing theory and practice in a given field discipline or in a subject is continuous process with Technology, Tools, Treatment, Testing and Transfer when there is Communication as well as Interaction with more knowledgeable Teachers and Tutors.

The transfer of knowledge and learning to new spheres of life-space brings changes, development and prosperity in the life of individual, as well as society and the contribution is acknowledged by other researchers and scholars in the field, discipline or subject as well as governments, states, organizations and institutions.

The contributions of the individual in his community concerned in any given field, discipline or subject are then cited and published in the form of articles, papers, columns and textbooks etc. to become established theory and practice for new generation to follow.

This transfer of knowledge and communication in the modern world is facilitated by ICT tools, sources, resources and technologies from one generation to another in the form of curriculum that include innovation in teaching methods and instructional strategies. This little effort of the author is a contribution to bring innovation in curriculum as well as teaching and instruction in Virtual Learning Environment Framework (VLEF).

The Teacher Education and Higher Education now-a-days are becoming more open and flexible to use the innovative methods in teaching, instruction and learning.

**STATEMENT OF THE PROBLEM**

Tech-knowledgy means to get knowledge through e-learning in Virtual Learning Environment Framework (VLEF) by using self-regulated and andragogical practices as well as modern tools of ICT and social media assisted by modern technologies and gadgets.

The problem was stated as: Developing a model for teaching and instruction in e-learning and in Virtual Learning Environment Framework (VLEF) in order to facilitate life-long, continuous and self-regulated learning in formal, informal and non-formal environments and institutions.

**OBJECTIVE OF THE STUDY**

Tech-knowledgy i.e. developing 8Ts model for paradigm shift from pedagogy to andragogy in ICT-integrated teacher and higher education in Pakistan and all over the world is the objective of the study.

**METHODOLOGY**

The study was Historical and qualitative and the researcher used Critical Discourse Analysis for teaching and instructional models of Teacher and Higher education.

**LITERATURE REVIEW: INSTRUCTIONAL STRATEGIES**

There are two types of models and strategies in teaching and instruction: Pedagogical and Andragogical. The pedagogical models are used when there is teacher-centered and child-centered learning as well as conceptual development in a subject or discipline through formal or non-formals institutions (Bruner, Piaget, Skinner models etc) while andragogical models are used in self-regulated, life-long, continuous adult form of learning in contextualized and meaningful environments (Vygotsky, Knowles, Collins etc.).

In the author view at school level, the best method are pedagogical in nature while in Teacher Education and Higher Education the best form is andragogical and self-regulated learning strategies. However, the literature review (author, 2017) in another paper on tech-knowledgy has shown that there is pendulum from pedagogy to andragogy in Virtual Learning Environment Framework (VLEF).

According to Duncan (1981) as cited in Rashid (2010): there are two types of teaching models: Historical and Psychological:

- The Historical Teaching Models includes:
    - The Socrates Teaching Model
    - The Classical Humanistic Model
    - The Personal Development Model
- The Psychological Model of Teaching has four types:
    - Glaser's Basic Teaching Model (1962): Classroom Meeting Model
    - Computer Based Teaching Model: Programmed Instruction (Skinnerian Model)
    - A Teaching Model of School Learning (Piaget & Brunner Models)
    - Interactive Teaching Model (Flander's Model)

According to Smith (1983) there are two types of Philosophical Teaching Models:

    - The Impressional Model (John Locke)
    - The Insight Model (Plato)
    - The Rule Model (Kant)

According to Habeden (1980) as cited in Rashid (2010): there are four types of Educational Models which enables the student-teacher to make their teaching effective.

    - Taba's Model of Teaching
    - Turner's Model of Teaching

- A Model of Variation in Teacher Education
- Fort Lipitt's Model

If we analyze all the models of teaching and instruction there are common basic elements that guide a teacher-student and instructor in achieving the instructional objective and educational goals of a subject or discipline.

The Glaser's Basic Teaching Model (1962) consists of four elements: Instructional Objectives, Entry Behavior, Instructional Procedure and Performance Assessment while the Herbartian Model has focus "syntax"; preparation and presentation, comparison and abstraction, association and generalization as Herbartian steps for instruction and pedagogy.

It has a "social system" as authorities, "support system" as books and literature with an "evaluation system" to focus recall, recognition and retention: the basic components of memory and thinking.

Morrison et al (1969); who were the proponents of teaching models focus on developing mastery over the content and to provide substantial knowledge of the subject matter. The steps include: Exploration, Presentation, Assimilation, Organization and Recitation. In "social system" the teacher behavior is not autoreactic but democratic. In "support system" the Audio-Visual Aids can be used while the "evaluation system" consists of different types of testing: objective and subjective.

Bigge & Hunt (1974) as cited in Rashid (2010): defined the reflective level teaching as careful and critical examination of an idea in the light of testable evidence that support it. Hunt (1974) model as cited in Rashid (2010): present focus on Problem Solving, Independent Thinking, Critical Outlook and developing Attitudes and Beliefs.

There are two types of approaches to personal problematic situation:

- Dewy's Problematic Situation, and
- Kurt Lewin's Problematic Situation

The Dewy's Problematic Situation is used in "Forked Path Situation" when the person is learning two equally attractive material and the person is learning in achieving these goals. While Kurt Lewin (2007) assumes that the individual lives in the environment and he tries to adjust in that (life space). There are physical environment, social consumers and psychological (pulls and pushes) in environment for individuals.

In the "social system" the teacher should be corrective and tactful and there is democratic environment. The learner is active participant in the learning situation. In the

"support system" there is already existing literature and the other social and education sources to help in knowledge development. While the "evaluation system" includes Viva Voce besides objective and subjective testing.

Hence, we conclude that in any teaching model there is a focus (syntax), social system, support system and evaluation system as its basic elements to plan a lesson or instruction in these models. So, while teaching in Virtual Learning Environment Framework (VLEF) for developing tech-knowledgy; these elements must be considered; inorder to teach, adjust and plan instruction according to students' needs and content level of difficulty.

Planning is required for maximum utilization of resources in effective and efficient manner. So, the teaching is planned for maximum utilization of educational resources and getting the instructional objective, educational aims and goals.

Gagne (1989) nine events of instruction can be used effectively to plan and design lesson through both pedagogy and andragogy in e-learning or Virtual Learning Environment Framework (VLEF). The steps include: Gain attention, inform learner of objectives, simulating recall of prior learning, present the content, provide learning guidance, Elicit performance, provide feedback, assess performance and enhance retention and transfer to the job or other content (Wolfolk, 2004).

Hence, we can say that Gagne's nine events of instruction are best for using as teaching model or instructional design strategy in tech-knowledgy. The adult learning theory-andragogy was presented by Malcolm Shepard Knowles (1913 – 1997) according to Wikipedia (2017) and he has termed andragogy as synonymous to adult learning. He has given principles of adult learning that include:

- Adults must want to learn (intrinsic motivation)
- Adults will learn only when they feel there is need to learn (learning is need-based and contextualized)
- Adults learn by doing (Behavioristic engagement and active involvement)
- Adults learning focuses on problem solving (cognitive and constructive approach)
- Experiences effects adult learning (influence of previous or prior learning i.e. ZPD is considered)
- Adults learn best in informal situation (when there is use of ICT or non-ICT tools and interaction as well as communication)

- Adults wants guidance and consideration as equal partners in the learning process (simulation and modeling as well as scaffolding)

According to www.ispringsolution.com: Andragogy i.e. adult learning theory is important in that it clearly outline the differences in learning characteristics between children and adults. So, it seems that it is particularly useful to authors of e-learning modules.

The author (2014) has discussed Cognitive Apprenticeships as an effective pedagogy for enabling students to use toolkits in Virtual Learning Environment Framework (VLEF). Collen et al (1989) has proposed Cognitive Apprenticeships model consisting of six major steps in instruction and teaching: Modeling, Coaching, Scaffolding, Articulation, Reflection and Exploration. Liu (2005) has discussed web-based cognitive apprenticeships model having three phases for pre-service teaching training program: Modeling-Observing, Scaffolding-Practicing and Guide-Generalizing.

Collins et al (1991) have discussed four processes of traditional model of apprenticeships that include: Modeling (initiation), Scaffolding (support and guidance), Fading (withdrawing support gradually); and Coaching (developing and guiding by masters and experts).

Cognitive Apprenticeships is based on Vygotsky's (1978) research and is also related to other conventional apprenticeships; where master of a skill demonstrate and model that skill to an immature learner and thus developing that skill gradually by withdrawing the support and the learner become expert in that skill as well as become self-regulated learner to advance the skill and competence by using andrological methods independently.

The researcher (author) in his paper presented in ICORE IER (2016) has discussed Advanced Cognitive Apprenticeships in which the step of "creativity" is included after exploration. Thus, the Advanced Cognitive Apprenticeships can be used as best methods of instruction in e-learning, traditional learning, blended learning, as well as in Virtual Learning Environment Framework (VLEF) i.e. Open and Flexible Institutions.

**FINDINGS**

The review of literature findings can be summarized as:

1. Andragogical methods are best used for adults, self-regulated, continuous, life-long and contextualized learning.

2. The andragogical methods use transformation of knowledge-based instead of information knowledge-base in pedagogy

3. In andragogical method the 8Ts iterative cycle is produced for developing and transfer of knowledge from one form to another (transformation learning).

4. The 8Ts iterative cycle can be used as andragogical model in Virtual Learning Environments Framework (VLEF).

5. The 8Ts iterative cycle model can be used as teaching and instructional models in teacher education as well as in higher education in Pakistan and all over the world.

6. 8Ts models consists of the following elements to complete the cycle and repeated: Transformation, Teacher, Tutoring, Technology, Tools, Treatments, Testing and Transfer.

7. The model could be named as 8Ts iterative cycle model in Virtual Learning Environments Framework (VLEF).

## DISCUSSION

According to Mezirow (2000): the transformational learning theory and andragogy discussed by Knowles as well as constructivist theory of Vygotsky are in agreement with the 8Ts iterative cycle model because both emphasis contextualization of learning through self-regulated strategies and methods. Because according to Mezirow (2000) in transformational learning the learner is engaged in critical reflection on his experiences, which in turn leads to perspective transformation.

According to Mezirow (2000) when transformation learning is the goal of adult education as discussed by Knowles fostering a learning environment in which it can occur should consider the following:

1. **The Role of Educator**

   According to Mezirow (2000):

   - The role of the educators is to assist learners in becoming aware and critical of assumptions that leads to their interpretations, beliefs, habits of mind etc. as well as the assumptions of others.

   - The role of educators is also to set goals and objectives that include autonomous thinking and critical reflection.

- The role of educators is to promote discovery learning.
- The role of educations is to facilitate the environment of self-regulated learning.

## 2. The Role of Professional Development for the Educators

Transformation learning about teaching occurs when educators critically examine their practice and develop alternative perspective and this will become the role of professional development for the educators.

## 3. Strategies for Transformation of Professional Development

According to Mezirow (2000); strategies for transformation of professional development include action plans, reflective activities, case-studies, curriculum development and critical-theory discussion.

## 4. Examples of Educators Professional Development

According to Mezirow (2000): Mentoring is another strategy for transformative professional, personal and organizational development. Mentoring as a two way process is a learning tool for both the mentor as well as the person being mentored.

## 5. The Role of Learners

According to Mezirow (2000): The role of the learner is to become critical of their own assumptions in order to transform their own assumptions in order to transform their unquestioned frame of reference. The role of the learner is to actively participate in the discourse and collaborate in learning process.

## 6. The Role of the rational and the affective

According to Mezirow (2000): In transformation learning there are two components: the cognitive and objective; and the intuitive, imagination and subjective. Both rational and the affective play a role in transformation learning.

## 7. The Role of ICT tools and resources

According to Mezirow (2000): The ICT tools and resources facilitate interaction and communication is transformational learning and andragogy.

**CONCLUSION**

The model developed for instruction and teaching in Virtual Learning Environments Framework (VLEF) for iterative cycle development is 8Ts Model consisting of:

1. Transformation
2. Teacher
3. Tutoring
4. Technology
5. Tools
6. Treatment
7. Testing
8. Transform

The following figures (1 – 4) can be used as the resulting process in 8Ts iterative cycle model.
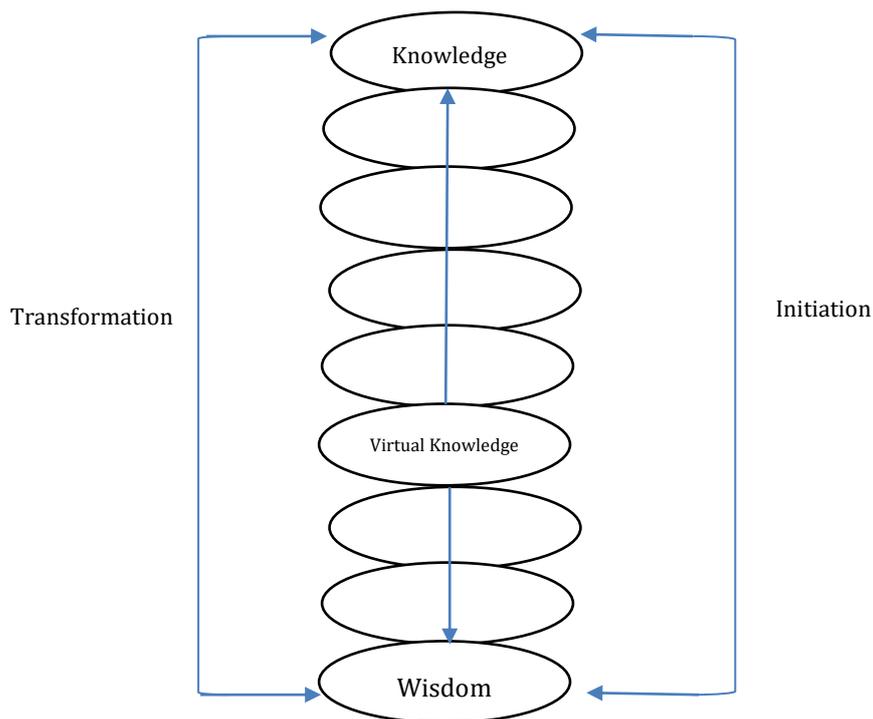


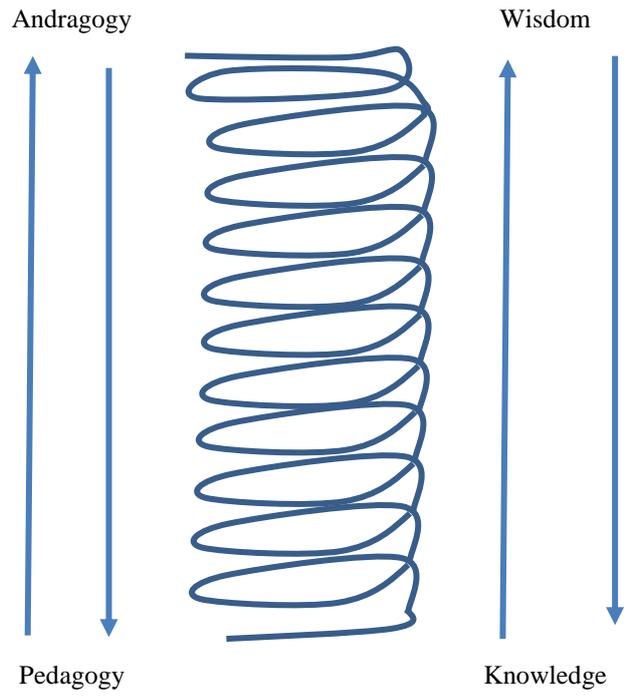**Figure 1: Development of Iterative cycles from knowledge to wisdom**

**Figure 2: Spiral organization of iteration in pendulum of pedagogy and andragogy**
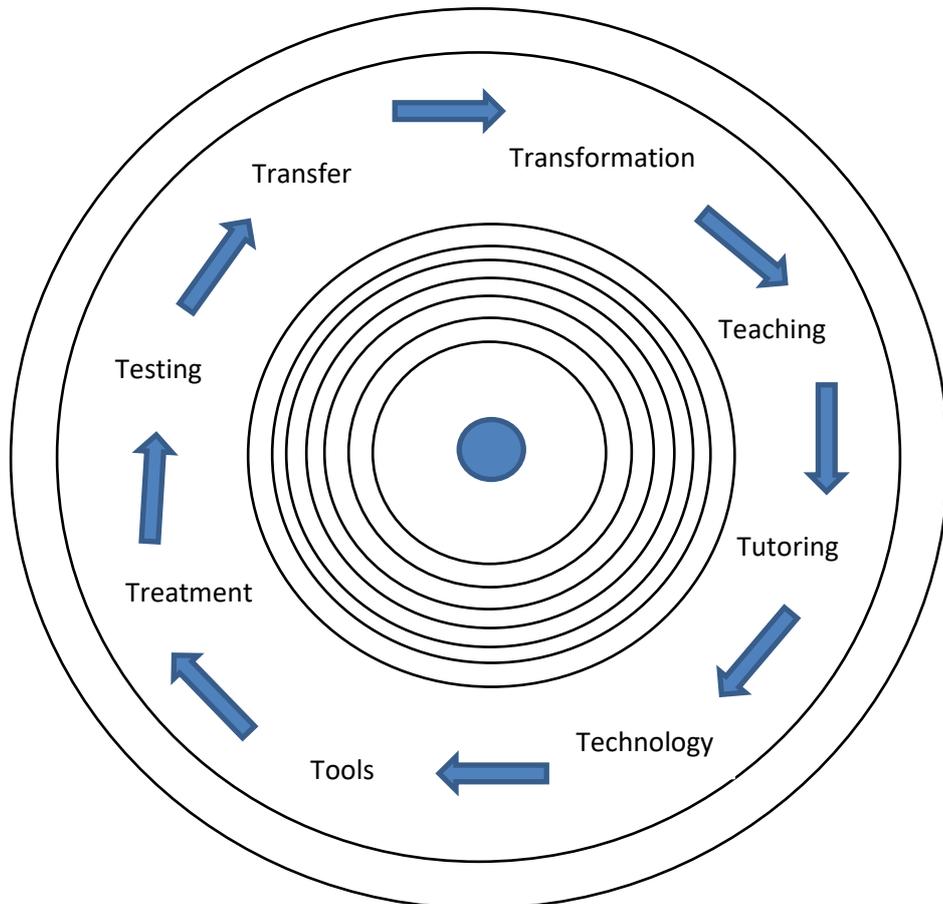


**Figure 3: 8Ts iterative cycle model for andragogy**

# Virtual Learning Environment Framework (VLEF) : A Theoretical Relativistic Framework
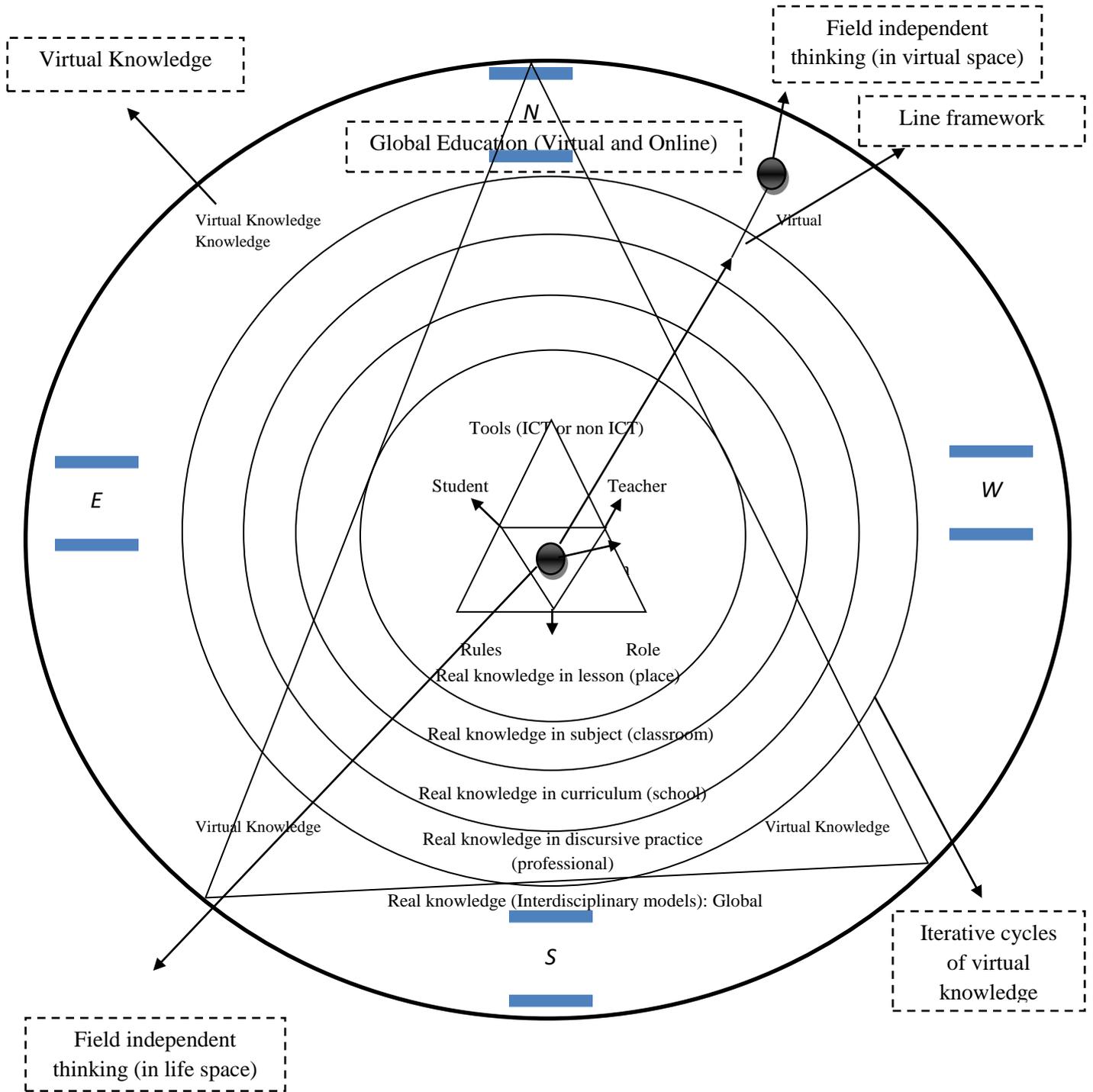


**Figure 4: Iterative cycles from knowledge to wisdom**

## RECOMMENDATION

The researcher recommended on the basis of findings, discussion and conclusion that: Tech-knowledgy requires transformational learning strategies and the model of teaching and instruction developed in this paper to be named as 8Ts iterative cycle model of andragogy should be used in teacher education and higher education in Pakistan.

## FURTHER RESEARCH

The researcher suggested further paper to integrate all the papers on Virtual Learning Environments Framework (VLEF) in order to have a mechanism of Open and Flexible Instruction through ICT tools and Resources.

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