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Educational Research Association
The International Journal of
Educational Researchers 2022,
13(4): 28-41
ISSN: 1308-9501



<http://ijer.eab.org.tr>

The Mistakes Model: A New Individual Learning Model Intended for Professional Development of Adults

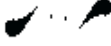
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Abstract

Business environment and its expectations have been changing due to technological development. Soft learners are needed in professional life therefore adults can carry on their personal and professional developments throughout their lives. The aim of this paper is to present a new learning model intended for adults within lifelong and online learning. This model is named 'Mistakes Model'. The model is based on three concepts: adult learning, lifelong/ online learning, and self-regulation. The theoretical background of the model is based on Knowles' andragogy and Zimmerman's self-regulation concepts. The model presents a crash individual learning model for adults based on Knowles's explanation because Knowles suggests testing out new learning models for different learners in different situations. The methodology of this study is a case study within a qualitative approach and introspection technique within Sufism was used to collect data. There are three stages of the model: Knot stage, Interval stage, and Unknot stage. The model is successful in learning new knowledge and skills however it should be tested by different adult learners.

Keywords: Adult Learning, Andragogy, Lifelong Learning, Online Learning, Self-Regulation, Introspection, Learning Model



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Introduction

There are different kinds of job positions and position descriptions in the working environment. Some personal specifications (or key competencies) in the job descriptions are the same or similar. For example, nimble learning (learning happens when you need it), identifying personal learning opportunities, technology acumen, being flexible and responsive to changes in requirement, comfortable with ambiguity, remain calm under pressure, skills in database and analytical tools such as R, SAS, SQL, Python, and tertiary qualification or comparable relevant experience. The position descriptions actually refer to maturity and competence of people in innovative organisations.

Knowles (1980, p.29) identifies fifteen different dimensions of maturation and these dimensions help adults increase their competency levels to solve real life problems. These dimensions guide to continuous life-long learning and diagnosis of needs. These dimensions should be seen as a growth process rather than achievable goals (Table 2). For example from subjectivity towards objectivity or from self-rejection towards self-acceptance (Knowles, 1980)

It is obvious that the new business environment and innovative organisations have been looking for soft adult learners (Garito, 2001; Holt, 1970; Mirke, Kašparová, & Cakula, 2019) who are able to learn anything at any time because knowledge and technology have been changing very quickly. In terms of adult learners, this quick change causes a gap between present level of competency and required level of competency (Knowles, 1980, p. 88). Most of us might have a bachelor's degree however as an adult we need to learn many subjects when we join a new working environment. In this data and information world, technology has also become a normal part of our daily life, especially during the COVID pandemic. All of us have tried to handle many job responsibilities online, to be technology savvy and to close the competency gap. There are three important concepts within this technological development and competency gap: adult learning, lifelong learning and online learning intended for adults, and self-regulation. The aim of this paper is to present a new learning model intended for adults within lifelong and online learning. This model is named 'Mistakes Model'.

Adult Learning/ Andragogy

Adult is defined as a person who is legally responsible for their actions (Oxford Dictionary, 2022) so adult learners should also be responsible for their learning activities. This refers to Dewey's (1938) experiential learning and adults should be able to learn throughout their own experiences (Dewey, 1938; Knowles, 1980). Adult education is not a new concept. It has been studied since the 1970s (Okur-Berberoglu, 2020a, 2020b) and is named as andragogy. Knowles (1980) defines andragogy as "the art and science of helping adults learn (p.43)" and as "a system of assumptions about learners that needs to be tested out for different learners in different situations" (Knowles, 1980, p. 59). Adult education is a combination of experiential philosophy, developmental psychology, and critical sociology (Eryaman, Yalcin-Ozdilek, Okur, Cetinkaya, & Uygun, 2010). The ideas of John Dewey, Erik Erikson, Lawrence Kohlberg, Carol Gilligan, Eduard Lindeman, Jack Mezirov, Paulo Freire, Urie Bronfenbrenner, and Malcolm Knowles create the theoretical and philosophical roots of adult learning (Tweedel, 2000). Adults can take initiative and learn more deeply and permanently by self-directed learning (Knowles, 1980).

Knowles (1980, p.56) emphasises that learning is an internal process. Methods and techniques that include learners in self-directed inquiry will create the greatest learning because these learners will be deeply involved in their self-diagnosis of their needs, in shaping their learning objectives and carrying out learning activities, and in evaluating their objectives. This kind of individual learning is very suitable for personal or professional development (such as to improve one's competence to perform a job). (Knowles, 1980) All these criteria also refer to self-regulation which will be discussed later in the paper.

Knowles (1980, p.123) categorises educational needs as programme areas, social roles, and types of behavioural change. Programme areas of this model are job-related subjects and skills, and personal development; social role is worker or employee, and types of behavioural change is to improve skills and competency. Educational objective is to increase IT and computer skills and competency. Adult education, therefore, refers to workplace learning and self-directed learning in this paper.

Lifelong learning and Online learning

The formal education side (eg. Massive Open Online Courses-MOOC) of adult education is ignored within this paper. Knowles (1980) defines this education as the ‘technical’ side of adult education. Milligan & Littlejohn (2014) especially point out that adult learners’ main motivation for this kind of MOOC courses is to have certificates. This model focuses on internal motivation as well as external motivation. Global challenges require new perspectives about learning and development and learning experiences do not only happen in the formal education system (Smitsman & Smitsman, 2021). Professional life, informal and nonformal education settings present many experiences and rich learning environments (Sidorkin, 2010; Tariq, Iftikhar, Chaudhary & Khurshid, 2022). This is called ‘lifelong learning’. (Dewey, 1938; Holt, 1970; Knowles, 1980)

Adult learner’s meaning has changed by the time. As mentioned above, changing business and technology environments have formed on-line learning (Garito, 2001). Online learning is one of the formats of individual learning and an effective resource for self-directed learning (Knowles, 1980, p. 134). Online learning is based on Skinner’s linear approach which learners take on a direct line to the last step and Norman Crowder’s branching approach in which learners have choices to see the next level (Knowles, 1980). Knowles (1980) says that learners do not need any classroom environment anymore. They can learn whenever and whatever they want at any time. The most important point here is learners’ needs, interests and motivation because andragogy starts with the adults’ needs and interests (Knowles, 1980, p.82).

Adults should be able to recognise their educational needs and interests. Their needs are usually based on competence and performance levels because adults define themselves by their life experiences (Knowles, 1980) especially by their social roles or jobs. Within this context, lifelong learning is very crucial for adults in terms of employability and competitiveness in the job market (Garito, 2001; Mirke et al, 2019; Zimmerman, 2002). Being independent financially is, therefore, very important for adults, and adults' financial and career expectations are the basic motivational resources and concerns for them (Knowles, 1980; Zimmerman, 2002).

There are many studies based on adult learning platforms for professional development, information technology, lifelong learning or online learning (Appana, 2008; Boud & Hager, 2012; Evans & Refrow-Rutala, 2010; Kashora & Charles, 2019; Milligan & Littlejohn, 2014). Some of them are very theoretical and explain why adult education in workplaces is important (Boud & Hager, 2012). Some of them are case studies based on a group of professionals. For example, Kashora and Charles (2019) aim to explore the use of online learning amongst Foundation doctors in South England. They collect their data via a survey from 66 doctors. More than half of the doctors say that they use online learning modules in their professional lives. They want to practice lifelong learning, to fill knowledge gaps, and improve their practices after making a mistake. The common theme of these studies is to ‘fill knowledge gaps’.

UNESCO (1996) emphasises that there are four pillars of lifelong education: Learning to know, learning to do, learning to live together, and learning to be. Learning to know is to know how to find and learn broad and specific knowledge. Learning to do it is to increase occupational skills and competency at work. Learning to live together is to understand how to live in multicultural environments. Learning to be is to improve self-reflection and self-development. (UNESCO, 1996). Laal and Laal (2012) point out that learning to know concepts is very popular but the other pillars have been overlooked. This study also focuses on the ‘learning to do’ and ‘learning to be’ pillars as well as ‘learning to know’.

Adults may experience some barriers throughout their lifelong learning process. These barriers might be situational, dispositional, or institutional. Situational and dispositional barriers are especially related to self-reflection and self-esteem. (Cross, 1981; Johnstone & Rivera, 1965). Laal and Laal (2012) highlight that adult learners should be supported to be able to cope with these internal barriers.

“The evidence is mounting that man’s ability to cope with a changing world is lagging farther and farther behind the changing world. The only hope now seems to be a crash program to retool the present generation of adults with the competencies required to function adequately in a condition of perpetual change.” (Knowles, 1980, p. 36) Garito (2001, p. 1) reiterates Knowles’s statement and says that it is necessary to rethink teaching and learning models to be able to keep up with the new

technologies. The aim of this study is, therefore, to present a crash individual learning model for adults based on Knowles's and Garito's explanations because Knowles (1980) also suggests testing out new learning models for different learners in different situations.

Self-Regulation

Learning was considered as a formal discipline until the 19th century and at the beginning of 20th century learning has started to be considered with psychological subjects such as self-regulation (Zimmerman, 2002). Zimmerman (1998, p.73) defines self-regulation as "self-generated thoughts, feelings, and actions for attaining academic goals." Self-regulation is important for lifelong learning (Zimmerman, 2002) and it requires cognitive and affective skills such as motivation (McCombs, 1989). They have self-awareness and know their strengths and weaknesses (Zimmerman, 2002).

Self-regulated learners regularly use metacognitive, motivational, and behavioural strategies (Zimmerman, 1990). Learners can "plan, set goals, organise, self-monitor, and self-evaluate" in the learning journey (Zimmerman, 1990, p.4). In the motivational process, learners have high self-efficacy, self-attributions, and intrinsic task interests (p.5). In the behavioural process, learners can create their optimum learning environment (p.5). They have self-motivation to set challenging goals for themselves, to adopt powerful learning strategies to reach these goals, to manage their own time efficiently, to adapt future learning methods, and for self-evaluation. Self-regulated learners rely on their personal initiatives, perseverance, and adaptive skills (Zimmerman, 2002).

The studies related to self-regulation are based on the young or adolescent students in the formal education system and their academic success. There are also remarkable studies based on self-regulation strategies in online learning environments (Artino, 2007; Puziffero, 2008) however all these studies are intended for young students or undergraduate students and their academic success. When the studies mention adults, they refer to postgraduate students and these students' motivational sources are quite different from professional adults (Cascio, Botta, & Anzaldi, 2013; Salikhova, Lynch, & Salikhova, 2021). There are studies based on self-efficacy, which is an important part of self-regulation, levels of adults in online learning environments. These studies are usually intended for health employees such as doctors or nurses and use quantitative research methodology (Cascio et al, 2013; Evans & Refrow-Rutala, 2010). It is not clear yet how adults go through this self-regulation process. At this point, the aim of this study is also to give a closer look into an adult's self-regulation process for an online learning environment.

Methodology

The methodology of this study is a case study within a qualitative approach and introspection technique was used to collect data. The case study is very useful in terms of collecting enough data (Yildirim & Simsek, 2006), and the fact of its capacity for yielding descriptive and explanatory results (Forces & Richer, 1973 in Zanovello, 1999; Okur-Berberoglu, 2015a, 2022).

Introspection Technique

Introspection is to observe one's own feelings, ideas, mental activity, and requires first-person reporting (Gould, 1995; Reidler, 2016). It is not a new technique. Freud suggested introspection to his patients and wanted them to record their thoughts and feelings. Later Freud and his patients discussed these records. (Spacal, 1990) Carl Gustav Jung (2009) observed himself for a long time and his observation records were collected in the Red Book which was published after Jung passed away. It is still unknown whether Jung recorded own introspection for academic purposes or not, but Jung (2009) points out in the Red Book that humans should first understand their own soul and essence and later they can understand the others.

Gould (1995) -as a researcher- observes his own thoughts and emotions in terms of consumer behaviour and emphasises that introspection is a powerful technique for mindful self-observation and to understand the inner world. Bode (1913) emphasises that the real experience and the description of the experience by another person-such as psychologist- are quite different. According to Bode (1913) introspection is a kind of description and explanation process of the inner world.Reidler (2016) uses introspection to understand her professional growth as an art educator within self-reflective auto-ethnographic research and defines introspection as an opportunity to speak from inside out. However,

introspection is not an easy process (Cioran, 2020) and observers should be aware of their own bias. Gould (1995) says that he was trained for mindfulness and Buddhism philosophy to carry out introspection.

The researcher focused on Sufism rather than Buddhism in this study. She especially would like to use Sufism philosophy for introspection because she has been interested in Sufism for more than 20 years and read many books of Rumi in Turkish and English (Rumi, 1898). Jung (2009) was also very interested in other religions and beliefs to understand his inner world. Sufism philosophy is based on Rumi's ideas derived from his introspection and extrospection observations (Bozorgzadeh & Grasser, 2021; Braybrooke, 2013). Sufism philosophy is mostly used in psychology (Shah, 1978), religion studies (Mirdal, 2012), and education (Meiklejohn, Phillips, Freedman, Griffin, Biegel, Roach, Frank, Burke, Pinger, Soloway, & Isberg, 2012; Napoli, Krech & Holley, 2005). Educational literature usually refers to mindfulness education however this study focuses on development of a learning model. It is not easy to develop a learning model (Reigeluth, 1999) and researchers usually focus on formal education settings while developing a model (Ergen, 2019; Arslan, 2021). As an adult, I thought that I should be a part of this process and first I should understand my inner world as Jung said.

I kept a diary during my job-hunting journey for the last five years and did content analysis to evaluate the data. I coded all the diary records, classified them according to common expressions (Flick, 1998; Okur-Berberoglu, 2021a, 2022, in press_a), tried to draw a self-regulated learning cycle, and an adult learning model in an online learning environment. This model is named 'Mistakes Model'.

Theoretical Background of The Model

The model is based on two theoretical perspectives. The first one is Knowles (1980) andragogy concept and the other one is Zimmerman (1998)'s self-regulation concept. Zimmerman mostly worked with students in the formal education system and his self-reflection perspective is adopted to andragogy in this study. (Table 1) Zimmerman (1998) asks specific questions to improve self-regulation in the programme.

'Why' question refers to learners' motivation to self-regulate their behaviour. 'How' question refers to using learning strategies such as visual or verbal strategies. 'When' question refers to effective time management for self-directed learning. 'What' questions refers to learning outcomes and behavioural competency. 'Where' question refers to a physical learning environment such as online or classroom. 'With whom' question refers to the social dimension of learning. Self-regulated learners know to whom they can ask help. (Zimmerman, 1998, p.74-75)

Zimmerman's (1998) 'Why' question matches with the motivation assumption of Knowles (1980) because adults are mostly driven by financial income and career expectations. 'How' question matches with the designing learning plan, learning activities, and evaluation assumptions because self-regulated adult learners know better than anyone else how they should direct their learning. 'What' question matches with readiness to learn and orientation to learning assumptions. This question is considered within the professional and personal development of adults because adults should improve their skills according to new technological developments. 'When' question matches with the learning activities assumption because adult learners should usually study outside of their working hours therefore should have good time management skills. 'Where' question matches with the designing learning plan assumption, and this model is based on non-formal education and online learning environments.

The 'with whom' question especially matches with the planning of process elements. Adults may ask/want help from their managers, colleagues, friends or they may search the possible training options on the internet on their own. This question may also be evaluated with 'role of learner's experience' assumption and 'diagnosis of needs' element. Learners are responsible for all the steps on their own. Zimmerman had (1998, 1990, 2002) often worked with the students in the formal settings and their motivation is mostly academic success. However, he emphasises that once self-regulation skills have been developed, they may be used for informal or non-formal settings as well such as adult education.

Table 1. The Comparison of Self-regulation Questions of Zimmerman (1998, p.74-75) and Assumptions and Process Elements of Andragogical Models of Learning by Knowles (1980, p. 390)

Self-regulation questions	Assumptions			Self-regulation questions	Process Elements		
	About	Andragogical	Mistakes Model		Elements	Andragogical	Mistakes Model
	Concept of the learner	Self-directed	Self-directed		Climate	Informal, relaxed	Informal, relaxed
WITH WHOM?	Role of learner's experience	A rich resource for learning by self and others	Learning by self	WITH WHOM?	Planning	Mutually by learners and facilitators	By the learner or ask/want help
WHAT?	Readiness to learn	Develops from life tasks & problems	Develops from professional life tasks	WITH WHOM?	Diagnosis of needs	By mutual assessment	By the learner
WHAT?	Orientation to learning	Task-or problem-centred	Task centred	WITH WHOM?	Setting of objectives	By mutual assessment	By the learner
WHY?	Motivation	By internal incentives, curiosity	Internal incentives (income and career)	HOW? WHERE?	Designing learning plan	Learning contracts and sequenced projects by readiness	Ready to go online training modules
				HOW? WHEN?	Learning activities	Independent study	Independent study by online training
				HOW?	Evaluation	By learner collected evidence validated by peers, facilitators, experts Criterion-referenced	Self evaluation by doing online tests or being able to perform the task

Principles of the model

The principles of the model were derived from the dimensions of maturation of Knowles (1980, p.29) and the content analysis of the researcher's diary. The seven dimensions of maturation were used. The detailed explanations of principles for each dimension and the meaning of each dimension within the principles can be seen in Table 2.

Table 2. Principles of the Model

Principles	Dimensions of Maturation	Meaning
Adults should have the attitude that learning is a lifelong process.	Ignorance -> Enlightenment	Adults should have a core of knowledge and skills of their occupations. They should also be aware of keeping up to date their knowledge and skills according to real life problems and expectations. (Okur-Berberoglu, 2016, 2018)
Adults should be aware of their own needs and interests.	Narrow interests -> Broad interests Need for certainty -> Tolerance for ambiguity	Workplaces' technical and psychological expectations have changed drastically due to technological development. It is needed to have more computer/digital literacy and handle ambiguity. (Okur-Berberoglu, 2015b, 2019)
Adults should be active inquirers of knowledge.	Passivity -> Activity Dependence -> Autonomy	Adults should tend to participate in learning platforms individually- such as online courses or training.(Okur-Berberoglu, 2015c, 2015d)
Adults should accept that it is normal to make mistakes while inquiring new knowledges and skills	Self-rejection -> Self-acceptance Impulsiveness -> Rationality	Every new knowledge or learning process is daunting and adults might underestimate their learning capability. They should not give up, and self-acceptance will happen after a while. (Okur-Berberoglu, 2014a, 2014b)

Result

An individual learning model was developed at the end of this study. The details and the characteristics of the model can be seen below in Figure 1.

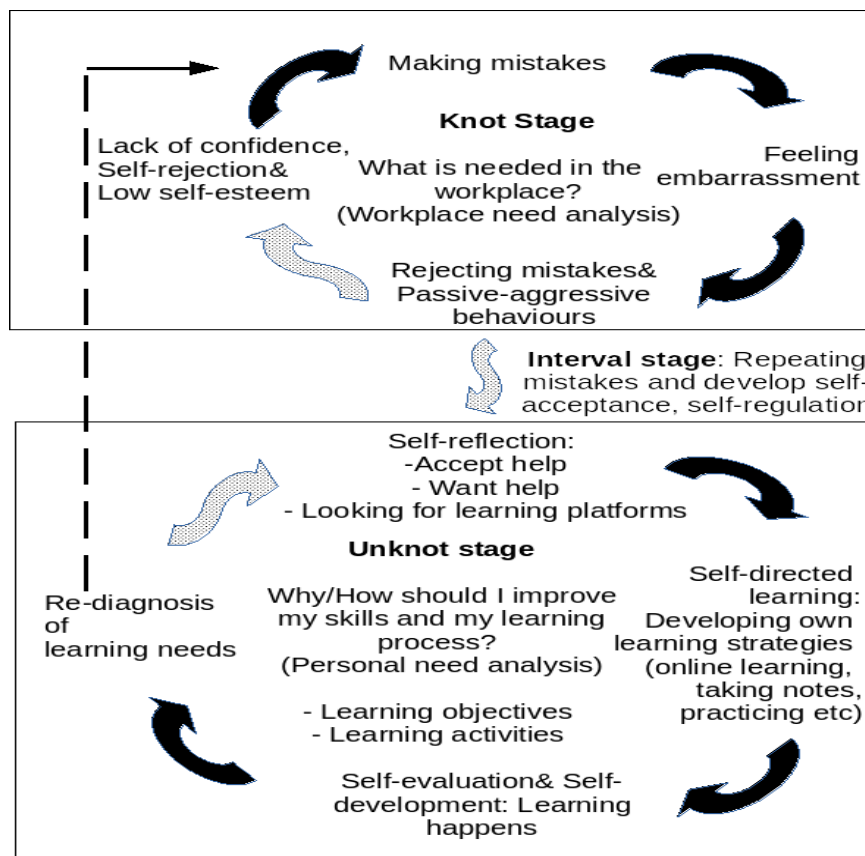


Figure 1. The cycle of the Mistakes Model

The characteristics of the Mistakes Model:

- a. There are three stages of the model: Knot stage, Interval stage, and Unknot stage.
- b. Knot stage has four steps: Making mistakes, feeling embarrassment, rejecting mistakes and showing passive aggressive behaviours, and lack of confidence, self-rejection and low self-esteem.
- c. The main question in the first step is “What is needed in the workplace?”. The learner realises what has been changing in the workplace, why s/he needs new skills, the gap between own competency and required competency. This stage also refers to Zimmerman’s ‘why’ question and Knowles’s motivation assumption (Table 1)
- d. The learner has two options at this stage: S/he can reject learning new subjects. If the learner stays in the knot stage, learning does not happen because the learner tends to reject his/her own mistakes. If the learner has been away from formal education for some time, s/he may underestimate own ability to learn (Knowles, 1980).
- e. This stage is named ‘knot stage’ because there is a lack of learning here and the learner has low self-esteem and lack of confidence. The learner shows passive-aggressive behaviours and is not keen on learning new subjects. Knowles (1980, p. 85) says adults show restlessness, irritability, impulsiveness, or indifference if they are frustrated in the learning process.
- f. However, if the learner is not afraid of making mistakes and carries on making mistakes, s/he starts to learn from own mistakes and thinks about taking initiatives for own learning. This is the interval stage between two stages. Self-regulation happens at this stage and the learner starts to control his/her own negative feelings and look for new solutions. According to Knowles (1980, p. 79-80) “Adults view failures as things to be learnt rather than defensive about”. This stage refers to Zimmerman’s “what” question and Knowles’s readiness to learn and orientation to learning assumptions (Table 1).
- g. Interval stage is very critical for this model because adults’ maturity development happens in this stage (Table 2). This stage is a kind of internal paradigm change phase for the learning process. Adults should be able to go through from one dimension to the other according to their development. For example, if the learner prefers to stay in the ignorance, passivity, dependence, self-rejection state, then s/he condemns their own learning process in the knot stage. If the learner goes through the interval stage this means s/he will go into the unknot stage and learning will happen. The learner’s motivation needs are also very critical for this stage. Adult motivation might be financial or career expectations therefore it is expected the learner to go through the interval stage because of her/his motivation.
- h. The next stage is named “unknot stage’. The main question here is “Why/How should I improve my skills and learning process?”. The learner does personal need analysis and decides own learning objectives and activities. S/he aims to close the gap between own competency and required competency.
- i. There are four steps in this stage as well: Self-reflection, self-directed learning, self-evaluation & self-development, and re-diagnosis of learning needs
- j. The learner is open to ask/want help and look for new learning platforms in the self-reflection step. The learner can talk to the manager or team leader about his/her learning needs and look for an online course. This step may refer to Zimmerman’s ‘with whom’ question in terms of asking help (Table 1).
- k. Interval stage and the self-reflection step refer to Zimmerman’s ‘how’ question and Knowles’s designing learning plan, learning activities, and evaluation assumptions. This step is the planning stage for the self-directed learning step. (Table 1)
- l. Self-directed learning step is the practical side of the self-reflection step. In this step, the learner takes initiatives for his/her own learning. S/he finds new learning environments, carries on the online course, library search, finding books, taking notes, practising. This practice also goes on in the workplace as well.

m. The learner carries on learning activities and evaluates his/her own learning outcomes in the next stage. If learning happens, this affects self-development positively. The learning process depends on individual differences such as background, gender, time management, or which learning strategies are used.

n. Self-directed learning and self-evaluation steps refer to Zimmerman's 'when' and 'where' questions. They also refer to Knowles's learning activities and designing learning plan assumptions. (Table 1)

o. The learner re-diagnoses his/her needs according to learning outcomes. When the learning target has been achieved, the learner will look for the next challenge. If learning does not happen, the learner may return to the first stage and carry-on making mistakes. The learner can go through the second stage, the learning process carries on with self-reflection and the learner becomes ready for the new challenge. This depends on how difficult the task is.

p. There are no specific time frames to complete this cycle. If the knot stage is shorter, the unknot stage forms faster and learning happens faster than expected. The learner can succeed 'self-actualisation' at the end of this cycle because the learner has reached his/her own targets.

q. There are no adult educators in this model. Learner is the mentor of himself/herself. Learners are responsible for their own need analysis, defining learning purposes and objectives, which learning activities will be used, and evaluation. This is also a kind of competency model (Knowles, 1980, p.228).

r. There are no specific programme designs in this model however learners are to find specific online training (such as LinkedIn, Coursera) according to their educational needs and interests.

s. The format of learning is online and individual.

t. Evaluation is done by the learner. The learner should consider whether s/he increases his/her ability to engage in self-directed learning.

u. This model considers improving affective and cognitive skills together. The knot stage and interval stage are mostly based on affective skills while the unknot stage is based on both- affective and cognitive skills.

v. I used this model to learn R and SQL programmes for the new business environment and it worked for me.

Discussion

The main aim of this study is to develop an individual learning model intended for adults. All these stages and steps are based on Zimmerman's (1998) self-regulation and Knowles's (1980) andragogy concepts, my own learning journey, self-observation of my skills and feelings. As Reigeluth (1999) mentioned, it is not easy to develop a learning model. The literature mentions different kinds of learning models (Artino, 2007; Cascio et al, 2013; Evans & Refrow-Rutala, 2010; Puziferro, 2008; Salikhova et al, 2021) however they usually mention a formal education system or a classroom environment.

The Mistakes Model is an individual model because of the technological developments in the workplaces. Teamwork is very important in the working environment and all team members have different backgrounds. One size does not fit all according to this model. There might be professional development activities in the workplaces however all these activities are usually based on common goals; they might be so easy or so difficult. That is why individual learning is important. (Holt, 1970; Knowles, 1980; Mirke et al, 2019; Zimmerman, 1998, 2002). What should be considered here is to provide learning resources and support for self-directed inquirers (Garito, 2001; Knowles, 1980).

Learning gives adults a sense of growth and that is why it is valuable for adults according to Knowles (1980, p. 85). Tariq et al (2022) also point out that the learning process acquires new and more creative approaches and techniques. Adults' psychological state is very important for their professional development because they might have low self-esteem for learning new subjects and skills. However, Thorndike emphasises that adults' learning capacity does not decline by the time; their learning speed is

a bit slower than children (Thorndike, 1928). Researchers, therefore, should think in terms of how they can improve adults' learning process (Okur-Berberoglu, 2015e). This model aims to fill up this gap.

Filling up this gap is also related to individual differences such as educational or social background, gender, working conditions, job requirements (Garito, 2001; Sidorkin, 2010). Knowles says that middle-class American adults are keen to experience a new learning environment therefore socioeconomic level is an important indicator for self-reflection (1980, p. 89). This explanation was not evaluated in this study however it is an important point. Further studies may focus on the individual differences in the learning process.

Knowles (1980), Holt (1970) and Garito (2001) suggest developing new learning models intended for adults and Reigeluth (1983) points out that every new model should be tested because theory and practice may have different outputs. This model is not only a theoretical model but also based on my personal experiences; however, it should be tested by the other learners and personal outcomes should be shared with the other researchers.

Humans are social creatures, and this model does not ignore the social development of humans. However, the meaning and mission of education and working environments have changed by the time. It is very clear that education does not happen only in educational institutions and by teachers. (Garito, 2001; Holt, 1970; Knowles, 1980; Sidorkin, 2010) There should be self-paced individualised learning modules (or learning packages) within competency-based learning (Knowles, 1980) so adults can learn whenever/whatever they want (Garito, 2001). These learning models have become more important during the COVID lockdowns. Whatever happens in humans' lives, education and improvement ought to carry on (Garito, 2001, Tariq et al, 2022). Humans should not limit their learning capacities and that is why adult education is also named as staff development, manpower development, inservice education, lifelong education (Knowles, 1980; Okur-Berberoglu, 2020a, 2020b, 2021b).

The technique used in this model is a bit controversial however the researcher believes that affective development, introspection, examination of the internal world are very crucial for the new learning models. Affective development and the inner world are usually ignored by researchers because they are very subjective concepts and it is difficult to prove the ideas and outcomes (Gould, 1995; Spacal, 1990; Jung, 2009). Introspection based on Buddhism is popular amongst researchers (Chambers et al, 2008; Gould, 1995; Kabat-Zinn, 2003). As can be seen in this research and Mirdal (2010)'s study, Sufism and introspection overlap on many internal subjects such as self-reflection, self-acceptance, self-regulation. These affective subjects should not be ignored in the programme development because affective and cognitive skills should be developed together to have better educational outcomes (Okur, 2012; Okur-Berberoglu, 2017a, 2017b; Okur-Berberoglu & Chamberlain, 2022; Okur-Berberoglu, Guder, Sezer & Yalcin-Ozdilek, 2013; Okur-Berberoglu, in press_b; Yalcin & Okur, 2014).

This model is mostly grounded in Knowles's (1980) 'Modern Practice of Adult Education' book. The literature in adult education often refers to this source and it reflects Malcolm Knowles's adult educator experiences. The book is still a very good source for adult education researchers despite online education not being very popular in the 1980s. Zimmerman's (1998) self-regulation concept was also used in the model. The literature also refers to different concepts such as self-efficacy, self-reflection (Cascio et al, 2013; Cross, 1981; Puziffero, 2008; Johnstone & Rivera, 1965). Other models based on different perspectives and concepts might be developed. Andragogy, online and lifelong learning are fertile research subjects according to UNESCO as well.

This study focused on the 'learning to know', 'learning to do' and 'learning to be' pillars according to UNESCO (1996)'s classification. At the end of this study the researcher could find out how to learn broad and specific knowledge such as R, SAS, and SQL programmes. The researcher has also carried on practising at work and used R, SAS and SQL programmes in her professional life. She also improved her self-reflection and self-development by introspection and Sufism. There are not many studies related to 'learning to do', 'learning to be' and 'learning to live with' pillars (Laal & Laal, 2012). The Mistakes Model is successful in improving the three pillars. The 'learning to live with' pillar is out of scope of this study therefore further studies can focus on this pillar.

Disclosure statement

No potential competing interest was reported by the author.

References

- Appana, S. (2008). A review of benefits and limitations of online learning in the context of the student, the instructor and the tenured faculty. *International Journal on E-learning*, 7(1), 5-22.
- Arslan, A. (2021). Preservice classroom teachers' applications of science experiments with cooperative learning model: A mixed design research. *Educational Policy Analysis and Strategic Research*, 16(3), 39-55. <https://doi.org/10.29329/epasr.2021.373>
- Artino, A. R. (2007). Self-regulated learning in online education. *Int. J. Instruct. Technol. Dist. Learn.*, 4, 3-18. http://itdl.org/Journal/Jun_07/article01.htm
- Bode, B. H. (1913). The method of introspection. *The Journal of Philosophy, Psychology and Scientific Methods*, 10(4), 85-91. <https://www.jstor.org/stable/pdf/2013473.pdf>
- Boud, D., & Hager, P. (2012). Re-thinking continuing professional development through changing metaphors and location in professional practices. *Studies in Continuing Education*, 34(1) 17-30.
- Bozorgzadeh, S., & Grasser, L. R. (2021). The integration of the heart-centered paradigm of Sufi psychology in contemporary psychotherapy practice. *Psychotherapy* 59(3), 405–414. <https://doi.org/10.1037/pst0000414>
- Braybrooke, Z. (2013). *Influences of Rumi on Sufism and psychology—a discussion*. <https://groups.psychology.org.au/Assets/Files/Zaharah-Braybrooke-Influences-on-Runi.pdf>
- Cascio, M., Botta, V., & Anzaldi, V. (2013). The role of self-efficacy and internal locus of control in online learning. *Journal of e-learning and Knowledge Society*, 9(3), 95-106.
- Chambers, R., Lo, B. C. Y., & Allen, N. B. (2008). The impact of intensive mindfulness training on attentional control, cognitive style, and affect. *Cognitive therapy and research*, 32(3), 303-322.
- Cioran, E. M. (2020). *The trouble with being born* (Translated by Richard Howard). Penguin Random House.
- Cross, K. P. (1981). *Adults as learners: Increasing participation and facilitating learning* (1st ed.). Jossey-Bass publishing
- Dewey, J. (1938). *Experiential learning*. Pentice Hall.
- Ergen, G. (2019). Value literacy – A new model for education of character and values. *Educational Policy Analysis and Strategic Research*, 14(2), 45-75. doi: 10.29329/epasr.2019.201.3
- Eryaman, M. Y., Yalcin-Ozdilek, S., Okur, E., Cetinkaya, Z., & Uygun, S. (2010.) A participatory action research study of nature education in nature: Towards community-based eco-pedagogy. *International Journal of Progressive Education*, 6 (3), 26-38. <http://inased.org/v6n3/ijpev6n3.pdf>
- Evans, A., & Refrow-Rutala, D. (2010). Medico-legal education: a pilot curriculum to fill the identified knowledge gap. *Journal of Graduate Medical Education*, 2(4), 595-599.
- Flick, U. (1998). *An introduction to qualitative research*. Sage Publication.
- Garito, M. A. (2001). The university for the new market of knowledge. *World Futures*, 57(4), 373-393. <https://doi.org/10.1080/02604027.2001.9972839>
- Gould, S. J. (1995). Researcher introspection as a method in consumer research: Applications, issues, and implications. *Journal of consumer research*, 21(4), 719-722.
- Holt, J. (1970). *The underachieving school*. Pelican Publications.
- Johnstone, J.W.C & Rivera, R. J. (1965). *Volunteers for learning: A study of the educational pursuits of American adults* (p. 221). Adlin Publishing.

- Jung, C. G. (2009). *The red book* (Edited by Sonu Shamdasani). WW Norton.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical psychology: Science and practice*, 10(2), 144-156.
- Kashora, F. K., & Charles, D. A. (2019). Online-learning: exploring practices among Foundation doctors. *Journal of Advances in Medical Education & Professionalism*, 7(1), 14.
- Knowles, M. S. (1980). *The modern practice of adult education, From pedagogy to andragogy*. Association Press, Follett Publishing Company.
- Laal, M., & Laal, A. (2012). Challenges for lifelong learning. *Procedia-social and behavioral sciences*, 47, 1539-1544.
- McCombs, B. L. (1989). Self-regulated learning and academic achievement: A phenomenological view. In *Self-regulated learning and academic achievement* (pp. 51-82). Springer.
- Meiklejohn, J., Phillips, C., Freedman, M.L., Griffin, M.L., Biegel, G., Roach, A., Frank, J., Burke, C., Pinger, L., Soloway, G., & Isberg, R (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness*, 3(4), 291-307.
- Milligan, C., & Littlejohn, A. (2014). Supporting professional learning in a massive open online course. *International Review of Research in Open and Distributed Learning*, 15(5), 197-213.
- Mirdal, G. M. (2012). Mevlana Jalāl-ad-Dīn Rumi and mindfulness. *Journal of religion and health*, 51(4), 1202-1215.
- Mirke, E., Kašparová, E., & Cakula, S. (2019). Adults' readiness for online learning in the Czech Republic and Latvia (digital competence as a result of ICT education policy and information society development strategy). *Periodicals of Engineering and Natural Sciences*, 7(1), 205-215.
- Okur, E. (2012). *Outdoor experiential teaching: Ecology application*. [Doctoral thesis, Canakkale Onsekiz Mart University]. http://acikerisim.comu.edu.tr/xmlui/bitstream/handle/20.500.12428/1932/Emel_Okur_Doktora_tezi.pdf?sequence=1
- Okur-Berberoglu, E., Guder, Y., Sezer, B., & Yalcin-Ozdilek, S. (2013). An outdoor hydrobiology activity's effect on students' affective perspective, case study: Canakkale, Science Camp. *Kastamonu Education Journal*, 21(3), 1177-1198.
- Okur-Berberoglu, E. (2014a). The pragmatic results of progressing scientific thinking development. *Balikesir University The Journal of Social Studies Institute*, 17 (32), 135- 150. <http://sbe.balikesir.edu.tr/dergi/edergi/c17s32/c17s32.pdf>
- Okur-Berberoglu, E. (2014b). Exploitation of environmental resources and rural people by global food companies. *Geography, Environment and Sustainability Journal*, 4 (7), 54-68. http://www.rgo.ru/sites/default/files/gi214_sverka.pdf
- Okur-Berberoglu, E. (2015a). The Opinions of the in-service teachers to ecopedagogy-based environmental education depend on holistic perspective. *Mersin University Journal of the Faculty of Education*, 11(3), 732-751.
- Okur-Berberoglu, E. (2015b). The correlation between intelligence areas and attitude of using media for grounding. *The Turkish Online Journal of Design, Art and Communication - TOJDAC*, 5 (2), 1-8. <https://doi.org/10.7456/10502100/001>
- Okur- Berberoglu, E. (2015c). Some suggestions for Turkey within the scope of outdoor education success of New Zealand. *Journal of Turkish Science Education*, 12 (3), 51-64. <https://doi.org/10.12973/tused.10146a>
- Okur-Berberoglu, E. (2015d). The Effect of ecopedagogy-based environmental education on environmental attitude of in-service teachers. *International Electronic Journal of Environmental Education- Green*, 5 (2), 86- 100. <http://eric.ed.gov/?id=EJ1077737>

- Okur-Berberoglu, E. (2015e). Historical empathy and perspective taking in the social studies. *Turkish History Education Journal*, 4 (1), 216-226.
- Okur-Berberoglu, E. (2016). Using personal selling and promotion as a teaching method in education: Some examples from TUBITAK environmental education. *Turkish Journal of Teacher Education*, 5 (1), 26-48. <http://tujted.com/index.php>
- Okur-Berberoglu, E. (2017a). Ecological dynamics model and ecopedagogy-based outdoor experiential education. *International Electronic Journal of Environmental Education*, 7(2), 134-151.
- Okur-Berberoglu, E. (2017b). Outdoor experiential environmental education: An adult-centred intervention for the affective domain. *International Electronic Journal of Environmental Education*, 7(1), 34-58.
- Okur-Berberoglu, E. (2018). Development of an ecoliteracy scale intended for adults and testing an alternative model by structural equation modelling. *International Electronic Journal of Environmental Education*, 8 (2),15-34. <http://dergipark.gov.tr/download/article-file/451600>
- Okur-Berberoglu, E. (2019). Evaluation of zero hour contracts within ecoliteracy in New Zealand. *International Electronic Journal of Environmental Education*, 9 (2), 73-80. <http://dergipark.org.tr/iejeeegreen/issue/45317/456734>
- Okur-Berberoglu, E. (2020a). An ecological intelligence scale intended for adults. *World Futures*, 76(3), 133-152. <https://doi.org/10.1080/02604027.2020.1730735>
- Okur-Berberoglu, E. (2020b). Effect of ecopedagogy-based environmental education on in-service teachers' consumer behaviour in Turkey: A follow-up study after seven years. *Journal of Sustainability Education*, 24 (December 2020), 1-22. <http://www.susted.com/wordpress/wp-content/uploads/2021/01/OkurBerberoglu-JSE-December-2020-General-Issue-PDF.pdf>
- Okur-Berberoglu, E. (2021a). Some effects of unstructured outdoor plays on a child: A case study from New Zealand. *International Electronic Journal of Environmental Education*, 11(1), 58-78.
- Okur-Berberoglu, E. (2021b). The comparison of New Zealand and Turkey within in-service teachers' eco-literacy levels. *Turkish Journal of Teacher Education*, 10 (2), 70-89. <http://tujted.com/makale/2848>
- Okur-Berberoglu, E. (2022). Some effects of an unstructured outdoor activity on preschoolers: A case study from Aotearoa, New Zealand. *Journal of Sustainability Education, General Issue May 2022: Workings of Transformation, Part Two*, 1-19. http://www.susted.com/wordpress/content/some-effects-of-an-unstructured-outdoor-activity-on-preschoolers-a-case-study-from-aotearoa-new-zealand_2022_06/
- Okur-Berberoglu, E. & Chamberlain, M. (2022). Career aspirations in STEM: Gender differences and similarities at Year 9. *Education Counts* (ISBN: 978-1-77690-911-7 (Online), 1-20, Ministry of New Zealand. https://www.educationcounts.govt.nz/__data/assets/pdf_file/0003/219252/Career-aspirations-in-STEM-Gender-differences-and-similarities-at-Year-9.pdf
- Okur-Berberoglu, E. (in press_a). Evaluation of humanistic curriculum within 'Accepted' movie. *International Journal of Educational Reform*.
- Okur-Berberoglu, E. (in press_b). Effect of unstructured outdoor plays on environmental awareness and creativity: A kid in the outdoors of Aotearoa, New Zealand. *Pathways Journal – COEO (The Council of Outdoor Educators of Ontario) The Ontario Journal of Outdoor Education*.
- Oxford Dictionary (2022). 'Adult's meaning. https://www.oxfordlearnersdictionaries.com/definition/american_english/adult_1
- Reidler, M. (2016). An art educator's journey of becoming a researcher: A self-reflective auto-ethnography of identity construction and personal growth. *International Journal of Progressive Education*, 12 (2), 138- 148. https://ijpe.inased.org/makale_indir/11

- Reigeluth, C. M. (Ed.). (1983). *Instructional-design theories and models: A new paradigm of instructional theory* (Vol. 1). Lawrence Erlbaum Associates Publishers.
- Reigeluth, C. M. (Ed.). (1999). *Instructional-design theories and models: A new paradigm of instructional theory* (Vol. 2). Lawrence Erlbaum Associates Publishers.
- Rumi, Maulana Jalalu-'d-din Muhammad (1898). *Masnavi Manavi* (Translated by E.H. Whinfield). Amir Kabir Publication.
- Puzziferro, M. (2008). Online technologies self-efficacy and self-regulated learning as predictors of final grade and satisfaction in college-level online courses. *The Amer. Jnl. of Distance Education*, 22(2), 72-89.
- Salikhova, N. R., Lynch, M. F., & Salikhova, A. B. (2021). Adult learners' responses to online learning: A qualitative analysis grounded in self-determination theory. *EURASIA Journal of Mathematics, Science and Technology Education*, 17(10), 1-13.
- Shah, I. (1978). *Learning how to learn: Psychology and spirituality in the Sufi way*. Octagon Press Ltd.
- Sidorkin, A. M. (2004). Student labor and evolution of education. *World Futures*, 60(3), 183-193. <https://doi.org/10.1080/02604020490431564>
- Smitsman, A., & Smitsman, A. (2021). The future-creative human: Exploring evolutionary learning. *World Futures*, 77(2), 81-115. <https://doi.org/10.1080/02604027.2020.1810536>
- Spacal, S. (1990). Free association as a method of self-observation in relation to other methodological principles of psychoanalysis. *The Psychoanalytic Quarterly*, 59(3), 420-436.
- Tariq, S., Iftikhar, A., Chaudhary, P., & Khurshid, K. (2022). Is the 'Technological Singularity Scenario' Possible: Can AI Parallel and Surpass All Human Mental Capabilities?. *World Futures*, 1-67. <https://doi.org/10.1080/02604027.2022.2050879>
- Thorndike, E. (1928). *Adult learning*. McMillan
- Tweedell, C. B. (2000). *A theory of adult learning and implications for practice*. <https://files.eric.ed.gov/fulltext/ED446702.pdf>
- Delors, J. (1996). *Learning: the treasure within; report to UNESCO of the International Commission on Education for the Twenty-first Century (highlights)*. The United Nations Educational, Scientific and Cultural Organization Publishing. <http://unesdoc.unesco.org/images/0010/001095/109590eo.pdf>
- Yalçın, S., & Okur, E. (2014). The effects of electromagnetic field (EMF) education within ecopedagogy on EMF awareness. *Pamukkale University Journal of Education*, 35 (1), 143-156.
- Yildirim, A. & Simsek, H. (2006). *Qualitative methods for social science*. Seckin Publication.
- Zanovello, I. (1999). *Outdoor and environmental education centres: A case study of Starthcona Park Lodge and Outdoor Education Centre, British Columbia, Canada*. [Master's thesis, Faculty of Environmental Design, The University of Calgary, Alberta].
- Zimmerman, B. J. (1998). Academic studying and the development of personal skill: A self-regulatory perspective. *Educational psychologist*, 33(2-3), 73-86.
- Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational psychologist*, 25(1), 3-17.
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into practice*, 41(2), 64-70.