Advancing adult learning using andragogic instructional practices

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ABSTRACT

Community-college professors possess knowledge in distinct disciplines and have varied experiences that they encompass in their college classrooms. Additionally, creating effective environments for teaching and learning require these assets from instructors to fulfill their curriculum needs. Teaching is a multidimensional and complex activity that requires the instructor to utilize various tools to effectively engage college learners. Often, instructors rely on their past educational experiences that were based on pedagogy (child-focused teaching) to deliver intricate material to adult learners. In this case, a dichotomy of subject delivery may arbitrarily be sustained in the classroom where the effectiveness of pedagogy limits the development of critical-thinking skill sets. Andragogy is an adult learning theory that informs teaching methodology developed to focus more on learner-based practices that grow from the content of lessons. It has been effective in engaging the characteristics of community college learners (Knowles, 1980b) in developing skill sets vital to various disciplines. The aim of this article is to encourage discussions on college campuses of how using andragogy advances adult learning by exploring andragogy usage in Radiologic

Technology (RT) and Early-Childhood Education (ECE) classrooms at an urban community college. Moreover, it is hoped that this article will provide undergraduate educators with instructional approaches that advance adult learning outcomes.

Professors must seek ways to motivate and challenge students to be critical thinkers and reflective (Sanchez & Lewis, 2014). For doctors to make informed decisions regarding a person's health, it is customary for them to send a patient to get various diagnostic exams including an X-ray. The technologists who perform these services must be proficient in administering these health exams. Early-childhood educators must also be pivotal in using analytical skills and thoughtful academic exercises with developmental experiences to produce successful learning outcomes for their students. These professionals rely on critical—thinking skills to adjust parameters relevant to their career. Employers seek to hire qualified candidates with the expectation that these individuals will have the knowledge, skills, and competencies necessary to work efficiently in various fields of work. Thus, it is crucial that those teaching learners aspiring to become radiologic technologists or early-childhood education (ECE) practitioners be effective at facilitating learning.

For the past several years, one author of this article has observed and received feedback from clinical health—care professionals regarding deficits in radiography students' critical thinking and communication skills. In addition, the second author of this article has made the same observation of ECE program students. Current research reveals some possible explanations for these observations, including students' social and environmental barriers, cultural influences, and personal experiences (Marr & Nicoll, 2013). These factors influence student progress in academic, career, and clinical goals (Marr & Nicoll, 2013). While many academic institutions in various disciplines have successfully graduated competent candidates in foundational subjects, the aspect of ensuring entry-level candidates' comprehensive preparation and equipping them with skills to confront real-life challenges in their disciplines has its deficiencies regarding communication and teamwork (Hart Research,

2015). Moreover, the goal of our teacher-education unit with respect to ECE program graduates is to not only engage students in the foundation of education principles and ECE academic content, but to help them develop the critical—thinking skills and communication skills necessary to become effective, multicultural educators. Radiologic science and early—childhood educators can modify their teaching styles by incorporating andragogy in their instructional practice in the classroom to motivate and engage learners in becoming better critical thinkers and communicators.

The aim of this article is to encourage discussions on college campuses of how using andragogy advances adult learning by exploring andragogy usage in Radiologic Technology (RT) and Early-Childhood Education (ECE) classrooms at an urban community college. Approaches of teaching adults will be explored with the goal of advancing radiologic technology and ECE students' competence in critical thinking, communication, and effective teamwork. Moreover, descriptions of how andragogy appears in both the radiologic technology and ECE classrooms will be discussed to improve the technical and patient interaction skills of the radiologic technology (RT) student and to improve the teaching skills of ECE students. Additionally, it is hoped that this article will provide undergraduate educators with instructional approaches that advance adult learning outcomes.

Literature Review
Instructional Approaches
The Instructor's Role – The instructor's role in the adult learning context is that of facilitator of learning or even a proactive mediator (Currie, 2000). The learner gained the most in the learning process when an instructor collaborated with the learner by recognizing and supporting the learner's knowledge and encouraging the learner in their growth process (Currie, 2000).

Diversity of Learners – It is important to be thoughtful or perceptive of learner differences while not generalizing with respect to stereotypes of race, age, or culture (Imel, 2001; Lange et al., 2011). Thus, respecting diversity among adult learners in the classroom or learning environment is crucial (Freedman et al., 2012; Knowles et al., 2012). Specifically, valuing adult learner diversity and creating a learning environment in which learners are free to explore, share, and continue to grow is key (Knowles et al., 2012).

Constructivist Methods – Applying constructivist theories to the practice of adult learning is recommended strongly in the education literature (McCall et al., 2018). A constructivist approach as described by many articles, is to emphasize teaching critical thinking skills using discovery methods, questions, probing, and problem-based learning strategies (Allen, 2008; Elmborg, 2010; Stern & Kaur, 2010). The aim of this approach is to empower learners to be self-governing, autonomous, lifetime learners (McCall et al., 2018).

Scaffolding in instruction is another constructivist practice (McCall et al., 2018). Scaffolding involves breaking down complex tasks or skills into small parts that can be completed alone (McCall et al., 2018). "This makes the task less stressful and more manageable, and helps adult learners see their progress" (McCall et al., 2018, p. 38; Gust, 2006; Kenner & Weinerman, 2011; Rapchak & Behary, 2013; Rapchak et al., 2015). Moreover, scaffolding offers multiple chances for learning for adult learners (McCall et al., 2018).

The Nature of Learning Experiences – A review of the literature with respect to adult learning advocates for learning experiences that are well-structured, practical, and collaborative for the learners to achieve the best learning outcomes (McCall et al., 2018). Sharing with learners the steps that will be covered during a class session or creating supplementary instructional resources like handouts, videos, etc., are examples of structure (McCall et al., 2018). These resources can help learners connect the topics discussed in class to tasks or specific assignments (Lange et al., 2011).

Identifying students' prior experiences and connecting them with new instructional topics can make learning practical (McCall et al., 2018). Using pre-assessments to determine learner information literacy strengths and needs, perceived confidence levels, and previous uses of information sources is a useful method (Dahlen, 2012).

Furthermore, collaborative learning activities are key (Mc Call et al., 2018). Adult learners can profit from exchanging their experiences with each other while connecting them to new learning (McCall et al., 2018). Opportunities for peer-to-peer learning, in-depth learner discussions, and other types of experiences where adult learners can share their knowledge with their peers and the instructor enable the learning process (McCall et al., 2018).

Andragogy – Adult Learning Theory

Andragogy is the ability to facilitate adult learning (Davenport, 1987). Alexander Kapp, a German educator, first used the term (andragogy) in 1833 to classify learning strategies that focus on adults (Knowles, 1975a). Malcolm Knowles is widely known for his work on andragogy, popularizing the term that more concisely describes the art and science of adult learning. Now, andragogy is classified as an alternative to pedagogy and "refers to learner-focused education for people of all ages" (Usman, 2015). Knowles (1980b) proposed that self-actualization should be the goal of adult education and the learning process should constitute the emotional, psychological, and intellectual aspects of a person. Thus, the educator's role can be viewed as assisting adults to develop to their full potential.

Knowles (1973) stated that there are five assumptions that define the characteristics of adult learning that are different from the assumptions regarding child learners. They are:

1. **Self-Concept**—As an individual matures, their self-concept moves from one of being a dependent personality toward one of being a self-directed human being.
2. **Adult Learner Experience**—Adults accumulate a growing pool of experience that becomes an increasing resource for learning.
3. **Readiness to Learn**—Adults' readiness to learn becomes increasingly oriented to the developmental tasks of their social roles.
4. **Orientation to Learning**—As a person matures, their time perspective changes from one of postponed application of knowledge to an immediacy of application. As a result, their orientation towards learning shifts from one of subject-centeredness to one of problem-centeredness.
5. **Motivation to Learn**—As a person matures, the motivation to learn is internal. This is from their self-driven goal of achieving a higher social, economic, and/or academic platform.

To be effective, educators must consider the major supposition that underpins andragogy—that adult learners, through their own backgrounds and rich life experiences, are driven by a desire to become self-directed, independent, and autonomous in their learning goals. The college educator may tailor distinct lesson plans and activities based in these concepts. Knowles (1980b) suggests that adult educators do the following:

● Set a cooperative climate for learning in the classroom (improves communication).

- Assess the learner's specific needs and interests (motivation).
- Develop learning goals based on the learners' needs, interests, and skill levels.
- Design sequential activities to achieve the learning objectives (scaffolding) (Vygotsky, 1994).
- Work collaboratively with the learner to select methods, materials, and resources for instruction (learning orientation).
- Evaluate the quality of the learning experience and adjust as needed, while evaluating the need for further learning (assessment, learning outcomes).

Andragogy is anchored in the characteristics of adult learning, a process that is based on the learner's familiarity with the material being taught. It builds upon pedagogic methods described in Bloom's taxonomy (1974). However, it pivots more on student-centered learning rather than a teacher-centered approach. Lessons are geared more to students' own experiences and correlation to subject matter rather than by ideas and examples from an author or instructor. Furthermore, adult learners link new knowledge to a wide range of personal experiences, which serve as valuable resources in the classroom. "The learners in andragogy exhibit eagerness to learn and further develop in all respects with innate motivation" (Usman, 2015: p. 3).

Reflecting upon the concept of pedagogy, which developed between the 7th and 12th centuries in the elementary schools of Europe, the term stems from two Greek words: "*paid*," which means "*child*" and "*agogu*s" that means "*leader of*" (Usman, 2015). Knowles (1973) defined it as the art and science of teaching children. Pedagogy has been used since the Ancient Greek times and has been applied as the standard method and practice of education ever since. When referring to teaching, *pedagogy* is used often as a synonym (Usman, 2015). Pedagogy "embodies teacher-focused education. In the pedagogic model, teachers assume responsibility for making decisions about what will be learned, how it will be learned, and when it will be learned" (Usman, 2015: p. 2).

Knowles (1980b) suggested that andragogy and pedagogy should not be viewed as dichotomous models, but rather two ends of an educational spectrum. The learning theories are compared in the chart (below) to illustrate the differences among pedagogy and andragogy (Knowles, 1980b):

| Pedagogy	Andragogy
Passive training methods are used, such as lecture and demonstration.	Active training methods involving learner-generated content
Instructor controls timing and pace.	Learners influence timing and pace, monitored by instructor.
Success is possible even without major contributions to the class.	Participant involvement is vital to success.
Ideas and examples come from the instructor.	Ideas and examples come from the participants.
Learners are inexperienced and/or uninformed.	Learners have experience to contribute real-life problems relevant to the lesson.

Andragogy builds upon pedagogy and has been utilized in professional education for several years (Fink, 2013). It has been established as improving communication in pharmacological students (McDonough, 2006) and teamwork with nursing students (Crook, 1985).

**Adult Learning Applications Linking RT and ECE Classrooms**

Simulated-based learning (Kong, 2015) promotes learning as an active process in which students reflect on their prior knowledge and construct their own views of the world through the physical and social interactions experienced (Kolb, 2005). Assessing key concepts in situation-based activities, helps the instructor navigate the dynamics of their students' cognitive skills and acquisition of integrated learning (Kong, 2015).

Dee Fink (1998) formulated a taxonomy addressing this paradigm in adult education that forms a coherent design, which supports significant learning. It can support competence in communication and effective teamwork in healthcare education and early—childhood education. His taxonomy builds on the premise of using learning goals to connect learning activities and assessment. His theory uses factors that consider the number of students, their level of education, the frequency of class

meetings, and the physical elements of the learning environment. Fink posits that these factors impact motivation and the dynamics of class activities. He created a pie chart that illustrates the flow of significant learning for adults, which builds upon the theories of Bloom's taxonomy.
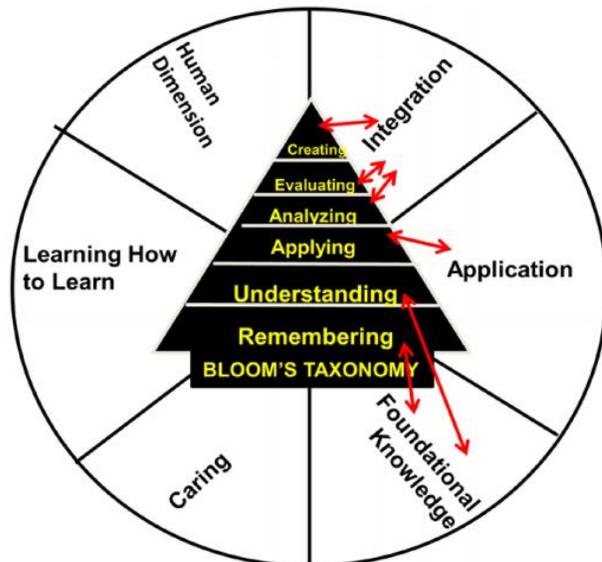
(Fink, 1998)
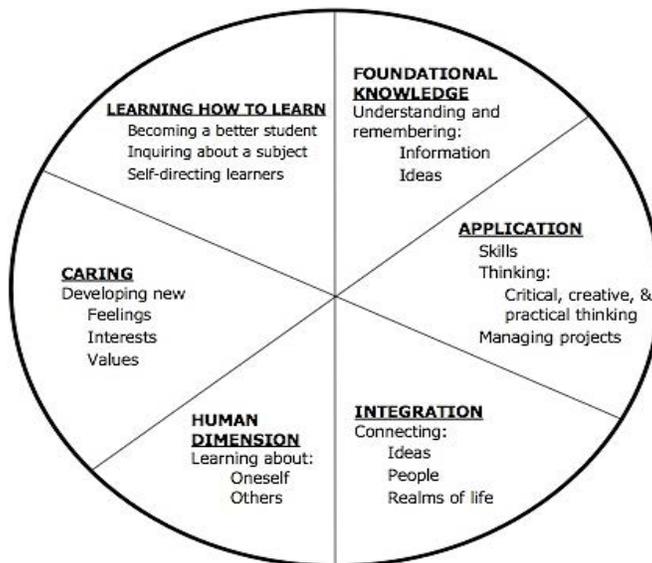
Fink's Taxonomy of Significant Learning (1998)

Fink's Taxonomy in the Classroom

Fink's work is not hierarchical but interactive, which means that each level of learning can stimulate the other. It goes beyond cognitive processing and includes a human element of caring and continuous

learning. Fink (2013b) formulated a backward—design process, for the facilitator to follow that focuses on situational factors that instructors face in challenging course material and learning goals. The characteristic of the learner is also considered as well as the characteristic of the teacher. The facilitator is instructed to design a course prioritizing learning goals and important situational factors faced by the instructor such as number of students, type of students, equipment availability, and classroom environment. From this assessment, Fink suggests that a course designer should analyze these situational factors, and then formulate learning goals, feedback, and assessment procedures that assists in selecting the best teaching/learning activities for their audience. We can apply the andragogy principles of Fink's taxonomy in a variety of ways if aligned within the scope of course outcomes. The chart (below) is an example of the applying Fink's taxonomy in an RT or ECE classroom.

Application Activity	Learning Outcome	Learning Assessments	Learning Activity
Foundational Knowledge Learners will understand and remember key concepts.	● Learners will be able to apply key concepts and terms associated with theories in radiologic sciences or EC	● Formative (no grades) and summative exams.	● Interactive learning in the classroom through applicable questions to students (active and passive).
Application Learners will perform/"do" important tasks.	● Learners will be able to recall and apply key acquired skills relevant to theory and situation.	● Written assignments assessing learner progression. ● Simulated lab assignments or TBL exercises	● Situation-based worksheets and reflective statements. ● One-minute paper where students write an in-class summative

Application Activity	Learning Outcome	Learning Assessments	Learning Activity
		to assess learners' acquired skills.	context of implementing key concepts (Barkley, 2009)
Integration Learners will identify/consider /describe the relationship between "X" and "Y".	• Learners will be able to discriminate and compare variants within the scope of the subject matter. (ex. differences and commonalities in parameters used for performing a task)	• Concept maps (conceptual diagrams) to assess each student's ability to find relationships between items like interpersonal dialogue, and the principles of verbal vs. non-verbal communication.	• Analysis making connections and conclusions on situation-centered cases. Instructor can assign groups with scenarios involving diverse situations and the variants needed to identify a solution.
Application Activity	**Learning Outcome**	**Learning Assessments**	**Learning Activity**
Integration Learners will identify/consider /describe the relationship	• Learners will be able to discriminate and compare variants within the scope of the	• Concept maps (conceptual diagrams) to assess each	• Analysis making connections and conclusions on situation-

between "X" and "Y".	subject matter. (ex. differences and commonalities in parameters used for performing a task)	student's ability to find relationships between items like interpersonal dialogue, and the principles of verbal vs. non-verbal communication.	centered cases. Instructor can assign groups with scenarios involving diverse situations and the variants needed to identify a solution.
Human Dimension Learners will better understand themselves and others, and interact positively.	● Learners will be able to better understand their personal comfort level in their work environment. ● Learners will be able to develop interpersonal skills that will foster a team-based approach in resolving challenging situational factors.	● Learning journals/ paper that will indicate, "I have learned … and I feel that this will have an impact in my discipline by..." (Scenarios presented that focus on the affective domain.) ● Field-based	● Students' reflections expressing their values towards cultural, social and age-related issues involving the subject matter. ● Weekly lab assignments in which students are rotated as team-leaders in performing lab activities.

		communication assessment that focuses on real-life scenarios. ● Written/oral communication exams that incorporate key concepts, theories and terminology.	The objective for the team-leader is to coordinate the workflow, document, and complete the lab project.
Caring Learners will care about issues related to their chosen career by connecting principles with their personal values to foster altruism in the clinical environment.	● Learners will be able to notice the value of compassion and empathy needed as a professional.	● Assignments that reflect on the needs of society or culture relevant to a topic in the lesson plan.	● Personal reflections through a learning journal ● Learner viewing of videos reflecting on the effect of subject on society or culture. Active discussions will follow to reflect their values.

| Learning how to learn

Learners will develop self-directed learning skills that will foster personal growth.	Learners will be able to synthesize outcomes in a variety of settings. It will define their reasoning skills.	● Problem-based examinations. ● Research paper that addresses advanced modalities and significance of pursuing professional growth.	● Field work in the discipline with interactions and interviews of individuals in the field. ● One-minute paper: Where do you want to be in 3, 5 and 10 years after graduation?

Effective teaching requires adaptive clinical skills, especially in communication by applying them to real-life applications. Using problem-based models focused on tasks that adults can perform, rather than on memorization of content, can be applied as a team-oriented or individual project. Adults are problem-solvers by nature and learn best when the subject is of immediate use and effective instruction involves the learner in solving real-life problems (Abela, 2009). Barkley (2009) suggested using an engagement technique, such as situation-based problems, that help learners make inferences on the learned principles that nurture a deeper level of understanding. These concepts are believed to nurture independent thinking in active learning (Barkley, 2009).

With this technique, students will not only identify theories, but make connections in how they relate to the main topics associated with theory (radiologic sciences) that are essential in developing analytical thinking skills (Barkley, 2009). A reflective clinical journal, where students document challenging cases observed or completed is an ideal learning exercise to discuss early in a lecture. Asking students reflective questions develops independent analysis of the student's cognition and participation of the presented material in the module (Barkley, 2009). The instructor may analyze these reflective assignments, assess the entry, and give feedback to each student's response to the clinical situation asking a

variety of questions from patient care, anatomy, exposure factors, positioning, pathology and communication.

Radiologic Technology (RT) Programs

Pedagogical instruction has been the main tenet of teaching in many radiologic technology programs. The educator's role of designing course material connecting to the learners' interests, experiences and skill levels is an important aspect for clarifying both fundamental and vague material. As an individual becomes more familiar with course content, they seek increasing autonomy and inspiration to grow in their adaptation to learning. As commonly practiced, students are given instructions and directed to recall and apply distinct information from a reservoir of relevant subject matter. While this is the primary objective of learning goals in a subject-centered framework, developing critical perception in learners should additionally be an essential part of the instructor's role. This is where RT faculty and clinical staff technologists can form a more symbiotic relationship in adapting teaching methods that center towards a learner's progress based on their personal experience in the clinical setting. Adapting self-reflective content into lesson activities where both theoretical and clinical aspects converge into a learning platform may foster students' critical—thinking skills.

Andragogy in the Radiologic Technology Classroom

In andragogy, Knowles describes the chief assumption of self-directedness where the individual takes the initiative of determining their needs. Addressing interpersonal as well as intrapersonal aspects of an individual's level of understanding requires the educator's awareness of how adults learn as individuals. Applying relationships that are familiar with the student will let the learner know why they are learning specific data relevant to their discipline. Peyton (1998) points out that most adult learners also require the motivation provided by teachers for effective learning to take place. This is paramount in the clinic where real-life situations join a learner's connection to theoretical principles (Abela, 2009).

For example, one author of this article has developed scenario-based activities that are incorporated in the RT students' capstone course. Students are given patient-centered and technical dilemmas to resolve as individuals, in collaborative projects, and classroom activities. For second-year radiologic technology students, lesson plans are designed to coincide

with the American Registry of Radiologic Technology's certification content that qualified students need to pass to gain employment as certified radiologic technologists. Categories are divided with respect to imaging parameters, applied sciences and patient care. Relevant material is scaffolded by starting off with foundational material, which then progresses into application of theory on challenging issues involved in the discipline. The following practices can benefit students in the classroom.

- Situation or problem-based modules: The instructor will create learning modules (case studies) that make specific references to the material covered in a lecture (Barkley, 2009). Analytical questioning in this module is based on real-life situations in the clinical field. An individual or a group of students must first identify the correct principles and then discuss the modifications that need to be applied in order to resolve the problem.
- Reflective Statements: The students will document reflective observations made in laboratory activities or clinical experiences with relevant topics ranging from pathology, equipment utilized, patient assessment, technical factor considerations or alternate applications that may be required (Brookfield, 1986). Documentation is based on the background of the selected field study and the learner's personal conclusions.
- Argumentative Statement: The instructor makes a statement about a specific issue (Barkley, 2009). It can be a topic on patient care, cultural issue, adaptive clinical protocols or a communicable disease, etc. Students are selected to agree or disagree with the statement and discuss their point of view on the topic based on their knowledge of the material. The instructor can pose a variety of statements with different variables to monitor active learning in the college classroom.
- Mind Mapping: An exercise where the learners actively engage in processing specific information into a schematic map of ideas associated with a topic (Barkley, 2009). A central theme is given based on the learning agenda. Learners draw diagrams representing words, ideas, issues, tasks, etc., around the central idea and the scenarios that branch from the topic. For example, the topic may be a young trauma patient with a host of medical issues. The trauma physician has ordered several exams to be completed on this patient. Students will start with the patient placed in the center of a board and then draw branches that are associated with standards ranging from patient care theory, therapeutic applications, diagnostic exam parameters, and

technical factors. This module helps students and groups think globally and creatively in analyzing, classifying, evaluating and listing, as well as structuring and visualizing important ideas.

An example of a worksheet utilized in a patient care classroom follows:

Patient Assessment Activity Worksheet

    <u>**Case:**</u>

A 32-year-old female from South America arrives with a suspected fracture of her left humerus. The emergency department physician orders exams of the left humerus, left shoulder, and right elbow. Her primary language is Brazilian Portuguese and she speaks very little English. Her nurse states also that this patient has vertigo and has severe pain in her left arm.

Instructions: *Use the grid below to make your assessment of the situation and the manner that you as a technologist would proceed with the exams ordered.*

	Application	Response
1.	What communication principles can you use for this patient?	
2.	Are there any distinct patient care factors you must consider for this patient?	
3.	Indicate the projections to be considered for left shoulder and left humerus.	
4.	Are there any technical considerations that need to be applied?	

    Self-Reflection (How can I improve my skills in communication?)**:**

    _____
    _____
    _____
    _____
    _____
    _____

Livingston (2019)

Foundations of the Early-Childhood Education Program

A primary goal for our college's ECE Program is to actively engage students in the learning process. To meet this goal, most of our ECE faculty incorporate instructional strategies that enhance student-centered methods and promote critical thinking (CT) as a theoretical foundation for class activities as "(CT)-based instruction, i.e., structuring a course by means of activities and strategies fostering CT, has been lauded for improving both CT skills and effective learning" (Toy and Ok, 2012: p. 39). The process of thinking critically requires that adult learners recognize and research the assumptions that serve as a basis for their views, beliefs, and actions (Brookfield, 1987a). "The purpose of CT tends to be to scrutinize two particular and interrelated sets of assumptions" (Brookfield, 1997b: p. 18). Writing assignments in courses have been improved to reflect the CT process in the pre-writing stages of essays.

Additionally, the progressivist and social reconstructionist philosophies of education have served as underpinnings to engage students in the teaching and learning process. The tenets of the progressivist philosophy are rooted in the philosophies of two major advocates, John Dewey and Eduard C. Lindeman. Dewey (1938) postulated, "All genuine education comes about through experience" (p. 13). Lindeman (1961), author of *The Meaning of Adult Education* who attempted to provide a framework for adult education in his book, argued that adult education aimed to train people to participate and to expose intelligent influence in small collective units like the home, the neighborhood, community, trade union, society, etc. The progressivist philosophy of education supports students' responsible participation in society as well as enables them to gain practical knowledge and develop problem-solving skills. In tandem, the social reconstructionist philosophy of education, which is also student-centered, helps students prepare for a society that is constantly changing. Through the lens of this philosophy, the purpose of education is to urge "schools, teachers, and students to focus their studies and energies on alleviating pervasive social inequities and, as the name implies, reconstruct society into a new and more just social order" (Sadker and Zittleman, 2010: p. 284). These two educational philosophies more accurately reflect the educational practice in our ECE classrooms.

Andragogy in the Early—Childhood Education Classroom
At least four instructional strategies have been employed in our ECE classrooms that reflect these two educational philosophies including small group work, team-based learning, role play, and service-learning.

The strategies have required use of a flipped classroom concept. Students use open educational resources (OER) to engage in academic content from the first day of class. Other content is provided, using technology resources, like videos, PowerPoints, pre-recorded video lectures, etc. Students are urged to review and analyze this content prior to coming to class so that the classroom can be devoted to application of the course content/knowledge to the work setting for which they are being prepared. It is customary for instructors to offer students vodcasts, pre-recorded video lectures, and/or podcasts to share the course content for usage external to the classroom in a flipped classroom approach (Jacobsen and Knetemann, 2017). Time in class can focus on other innovative material using group activities (Jacobsen and Knetemann, 2017). The benefits of flipped classrooms include the formation of firm social bonds between students and with their teachers, increased levels of student appreciation of the learning environment, enhanced willingness to work collectively in class to gain deeper insight of the course content, and increased class attendance, student cooperation, and involvement in classroom activities (Jacobsen and Knetemann, 2017).

An effective instructional strategy used in ECE classrooms is small—group learning (SGL). "SGL is a common technique in collegiate instruction and allows for several specific non-traditional learning contexts to develop within it, including problem-based, project-based, cooperative, collaborative, or inquiry-based learning" (Peltola, 2018: p. 323). A review of the literature reveals that students who learn jointly in small groups display greater academic achievement, motivation, and fulfillment than those who do not (Peltola, 2018). Vygotsky's "zone of proximal development" illuminates the positive effect of group learning (Peltola, 2018). Participating in small groups helps students learn more through the group interaction permitting them to reach a higher stage of knowledge than they could learning alone (Peltola, 2018). In many ECE classrooms, SGL is prevalent when activities are used that involve real-world problems that students analyze to help determine how they might confront the problem when they start teaching. SGL is also common in the students' self-directed learning in their SGL community, and when the small group researches a topic and presents its findings to their class colleagues and/or present findings outside the ECE learning community.

In tandem with SGL, the team-based learning (TBL) approach has been effective in ECE classrooms. The flipped-classroom model and active-learning philosophy are used to foster learning through recurring

exchanges (Huggins and Stamatel, 2015). In TBL, "students learn basic course content on their own through readings and/or videos or other media; then most of the class time is spent working on activities in stable, small groups" (Huggins and Stamatel, 2015: p. 228). Using this model, ECE classroom instructors can focus on designing effective team activities and facilitate discussions "within teams, between teams, and with the class as a whole," reducing the emphasis on conveying course content (Huggins and Stamatel, 2015: p. 228). The strength of TBL features are supported in diverse theoretical foundations (Hosseini, 2010). A few that the authors of this article believe support TBL in ECE classrooms are andragogy theory espoused by Knowles, cognitive theories espoused by Dewey, Piaget, and Vygotsky, and behavior—leaning theories like those of Skinner and Bandura (Hosseini, 2010).

The TBL approach has been effective in ECE classrooms because of its benefits to students including (1) fostering independent learning and personal accountability; (2) increased, and more robust, interactions between students and teachers; (3) critical and creative thinking skills are practiced; and (4) advancing affective skills like communication, discussion, and decision making (Huggins and Stamatel, 2015). In the ECE classrooms at our community college, OER and/or other course content is made available to students in advance of class, instruction is differentiated, specific team roles are given to students, research is conducted on topics, and presentations are developed in teams and presented in teams to class colleagues.

Adding to TBL, role-play in the classroom has been used as a means of helping visual learners to gain a better grasp of course content. Role play is used in multiple disciplines like law, business, history, engineering, and education (Pettinger et al., 2014). "As Fink (2003a) noted, role play simulations are rich learning experiences in which students are able to simultaneously achieve multiple kinds of significant learning," (Pettenger et al., 2014: p. 504). Students who participate in role play simulations get the chance to interact, reflect, and analyze information, problems, and situations (Pettenger et al., 2014). Role play in our ECE classrooms has included designing skits that illustrated academic content and identification of authentic problems in the ECE classroom that students might encounter when they begin teaching. This strategy has helped to clarify content and has engaged students more because they enjoyed participating.

The fourth instructional strategy used in many ECE classrooms is a service-learning component. An example reflected in the ECE classroom practice is in the Language Arts for Young Children course sections where students participate with the Reading Partners Project, which is nationally recognized for building children's literacy. Students tutor children a minimum of 10 hours during the semester to develop their reading and literacy development skills, and, in the process, gain experience working with children who have some of the greatest need in developing their foundational skills in literacy.

Conclusion

As professors who facilitate adult learning, one must recognize that pedagogy steers students' mastery of a specific subject content and might not build skills, abilities, and positive attitudes. It holds no measure of a learner's sequential practice in cognition, affective and psychomotor skills. In contrast, andragogy—an adult learning theory—informs teaching methodology developed to focus more on learner-based practices that grow from the content of lessons. It has been effective in engaging the characteristics of community college learners (Knowles, 1980b) in developing skill sets vital to various disciplines including RT and ECE.

Applying andragogical approaches can assist the facilitator in developing metacognition (awareness and understanding of one's own thought processes) in RT and ECE learners. This is a key component in developing the learner's effectivity in their academic and clinical progression. While there are various methods involved in andragogy that can be applied in the classroom, the very inherent nature of the adult students' self-reliance and motivation is the main issue that RT and ECE educators face as an obstacle. Dissuading students from guided-based practices and moving them towards an environment that provides field experience, supports self-directedness and contributes profoundly to the learner's success. Thus, adapting current adult educational methods in the classroom has multiple benefits in which RT and ECE classrooms share. It is up to the professor to understand the concepts of andragogy, consider their students' learning styles and academic background, and build effective courses that address these parameters.

This article explored how andragogy was used in RT and ECE classrooms at an urban community college. In RT classrooms, simulated-based learning, problem-based learning, reflective exercises, and mind mapping approaches were used. In ECE classrooms, small-group work,

team-based learning, role playing, and service-learning approaches were identified as approaches that optimize adult learning outcomes. For both RT and ECE classrooms, the goal was to advance the critical thinking and communication among adult learners.

The authors of this article encourage discussions on college campuses of how using andragogy advances adult learning. Moreover, it is hoped that the andragogical approaches identified in the article will serve as examples that can be used to expand the learning outcomes of adult learners.

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