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Active Learning Framework and Process of Classroom Engagement: A Literature Review

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ABSTRACT

This literature review shows different types of Active Learning Frameworks (ALFs). It includes behaviorism, constructivism, connectivism as a learning theory, universal learning design, deductive and inductive teaching techniques, debates, discussions, microlearning, and digital storytelling techniques, improving student engagement and participation, enhancing the learning environment, and building knowledge structure. The literature shows that the classroom environment of the 21st century differs from the traditional teaching environment. The Internet and modern research-based teaching models have created fundamental, long-term changes in the classroom teaching environment, technologically, socially, and psychologically. As the norm of traditional teaching models has slowly eroded, ALFs have taken their place across junior colleges, 4-year colleges, and graduate-level universities. This replacement represents significant changes in educational pedagogy. Although using a new teaching framework is generally difficult in the classroom, a blended teaching method will facilitate active learning. This study's findings suggest future research possibilities for an ALF that can benefit the classroom. Ultimately, using an ALF can lead to a more comprehensive active learning process, thereby helping students and institutions of higher education. There is a need to explore educators who have experienced ALFs regarding how different ALFs have affected student engagement and participation in the structure of building knowledge. Quantitative survey data may then help generalize the research results.

KEYWORDS: *Teaching, Active Learning, Learning strategies, teaching techniques, Universal Design for Learning, Constructivism, Behaviorism, Deductive teaching techniques, Inductive teaching techniques, Connectivism*

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INTRODUCTION

This paper is a literature review to show how different active learning models or frameworks can improve student engagement and participation and build knowledge structure. How cognitive processes govern learning in the classroom; given the peripheral learning instruments such as active learning techniques and how individuals know new information, it is vital to implement functional learning frameworks in a classroom teaching environment. The study showed that active learning techniques work for all fields, depending on the method used in pedagogy. Prince (2004) identifies three of the most common approaches to active learning as collaborative learning, cooperative learning, and problem-based learning, each of which has different applications and implementation. Collaborative learning, according to Prince, is any learning in which students work together on a project or toward the same learning outcome. Cooperative learning is also collaborative, emphasizing joint incentives and shared goals, whereas collaborative learning is sometimes centered on competition. However, in problem-based learning, the instructor presents students with challenges from the real world. Students must develop solutions to the problem. However, problem-based learning is self-directed,

with the instructor acting as a guide and facilitator rather than an expert with answers. Cattaneo (2017) classifies active learning activities as problem-based, discovery-based, inquiry-based, project-based, and case-based. It finds that each approach is student-centered but varies widely in its implementation.

In the 21st century's classroom environment cannot be comparable to the traditional teaching environment one experienced. The Internet and the modern research-based teaching models have forever changed our classrooms' teaching environment technologically, socially, and psychologically. Active learning approaches challenge the traditional, or "banking," education model, in which learners are generally passive. The model is expected to listen and take notes, but they are not required to interact with or think deeply about the content. Most students are asked to recall and repeat what they have learned in an exam or paper. Active learning centers on the learner and encourages interaction, engagement, and reflection. The emphasis on active learning is less on content, skills, and concepts or on learning how to learn (Thomas, 2009).

This study will show active learning frameworks such as behaviorism, constructivism, and Connectivism as a learning theory, Universal Design for Learning (UDL), Deductive and inductive teaching techniques, debate methods, micro-learning, and digital storytelling techniques enhance the learning environment.

Literature Review

Using active learning techniques, teachers can inspire and ignite students' inner thrust of knowledge to discuss in the classroom activities that active learning methods help students understand and comprehend processes better than the passive method that teachers are just lecturing in the classroom class. Researchers describe active learning as a way to increase student engagement in classroom, laboratory or field experiences (Jarvela & Renninger, 2014). Educators should use the prior research results that have been conducted to see how people know. A suggestion was made to overcome this problem: the study should be in moderation and a small segment more interactive method to get interested and discuss and learn and open their cognitive thinking process. Besides assessment activities, there many modern teaching frameworks that teachers are using in the classroom reflecting the research-based teaching frameworks.

Behaviorism: Psychology became an acknowledged science in the latter portion of the 19th century and was defined as the science of consciousness. "Behaviorism is moment primarily in American psychology that rejected consciousness as psychology subject matter and replaced it with behavior" (Leahey, 2000). To understand behaviorism, it is important to understand the intellectual movement that contributed to its development. Behaviorism is a psychology that was strongly influenced by positivism, a philosophical movement (Amsel, 1989). Behaviorism emphasizes the knowledge that all behavior is learning through interaction, such as students responding and acting in the classroom, and suggests that teachers can directly influence their behavior. In addition, behaviorism focuses on repeated behavior which eventually becomes a habit (Duchscher, 2000).

According to Watson 2001, Behaviorism was a psychology that limited its inquiry to stimuli and Responses and insisted on empiricism, determinism, and analysis as the scientific hallmarks of the discipline. It excluded both physiological and mental states as no observable fiction and rejected holistic psychology because it was nonanalytic. The behaviorism of Watson and Skinner is created on a positivistic method to science, and a reductionist is a relation between physical stimuli and the corresponding unique response (Webb, 2007). However, Skinner eventually realized that human beings, beyond just responding to the environment. And he found that they also react to the atmosphere based on prior experiences (Skinner, 1971).

According to Rotfield (2007), psychologists invested behaviorism as a basis for the theoretical explanation, prediction, and testing. Behaviorism provided a way for social science to investigate to allow control and dimension of all relevant variables by disregarding human cognition. But in an online learning environment, behaviorism involves chunking curriculum into smaller instructional steps. These steps more manageable steps can then repeat with ongoing monitoring of student learning.

Constructivism: Constructivism refers to one's perspective and position within educational contexts with the philosophical meaning of constructivism described by Piaget (1967), social constructivism drawn by Vygotsky (1978), radical constructivism advocated by Von Glasersfeld (1995), and constructivist epistemologies, and informative constructivism (Mathews, 1998). Constructivism is assumed that learners must construct their knowledge independently and cooperatively. Each learner has ideas and skills to create understanding to solve problems the environment presents. The role of the community, other learners, and teachers is to provide the setting, pose the challenges, and offer the support that will inspire mathematical construction (Davis, Maher & Noddings, 1990).

Constructivism's perspective refers to the individual and groups as to the importance of meaning-making. And an active role of the learners and the group of learners to make the theory of educators. Teachers are aware of prior knowledge of students' ability, identifying scholars as not blank slates or empty vessels filled with wisdom. Instead, students bring experiences, knowledge, and beliefs to construct new understanding to illustrate concept maps reflecting a massive array of backgrounds and prior knowledge (Jones, Carter, & Rua, 1999). However, the diversity of students' primary concepts on the concept map is an excellent source of curriculum planning for academic instruction.

Research has shown that students do not replace preconceptions with new conceptions, but students may hold original initiative simultaneously with newly constructed formal science concepts (Hewson &Hewson, 1992; Scott, 1992; Strike & Posner, 1985). But the most recent studies may involve the conceptual changes as minor a case of replacement and more a part of the development process that involves concepts embedded within a broader conceptual ecology that consists of 'anomalies, analogies, metaphors, epistemological beliefs, metaphysical beliefs, knowledge from other areas of review, and information of challenging conceptions (Strike & Posner, 1992).

The effect of constructivism in education today can be seen in various published curricula and instructional practices. The statement replicates the constructivist standards of small group work, helpful growth of ideas, and the role of written and spoken language in learning. According to Carter & Jones, 1994, the importance of the significant others about constructivism on some educators to question the usefulness of ability groups. The ability has come under fire as a traditional strategy that fails to build on the strength of diverse student abilities and viewpoints. As a result, educators are progressively using older student tutors and more advanced students in instruction. Knowledge is never acquired passively, and its novelty cannot handle except through assimilation to the cognitive structure of the experiencing subject. The subject doesn't perceive an experience as novel until it generates a perturbation relative to some expected outcome. The frequent concern for the developing cognitive subject is the interaction with others (Von Glasersfeld, 1989).

The higher mental functions of inter-psychological processes originate between and among individuals. The parts move to an inter-psychological plane by a series of mechanizations determined by the individual cognitive processes. The learning may be first developed in small group settings that are precursors to the inter-psychological and unique processes (Wertsch, 1985).

Connectivism as a learning theory: Connectivism is a learning theory for enhancing student studies with the information and insight gained through adding an individual network (Siemens, 2004). Through private networks, the learner can acquire the viewpoint and diversity of opinion to make critical choices. Since it is incredible to involve in everything, the learners can share and learn through collaboration. The amount of data accessible makes it great for a learner to know all that is needed to examine specific circumstances critically.

The central skill is the ability to see the connections of existing ideas as seen from present reality—the relationship to enable continual learning. Decisions are supported by rapidly altering basics as new information is integrated quickly to create a new climate of thinking. The constant update and shift of knowledge also can be contained outside the learner. The more critical existing state of knowledge is the beginner to be connected to this outside knowledge. The specific continues the cycle of knowledge growth by his or her access back into the system. The advantage is that the learners can remain current on any topic through the connections that have been shaped. Within any definite social network, there is an emphasis on groups of people with a common area. Thus, they can promote and sustain a well-organized flow of knowledge (Siemens, 2004).

Connectivism is actionable knowledge were understanding where to find knowledge may be more important than answering how or what that knowledge encompasses. According to Verhagan 2006, connectivism is a pedagogical view, and it is a learning story that should address how to enable the learners at the instructional level. Suppose connections consider a learning theory instead of being connected for the transference and promotion of the learner's understanding. Kerr (2006) thought connections to be a part of existing learning theories, where various technologies only affect methods of instruction in numerous ways (Downes, 2007).

Universal Design for Learning (UDL): Universal learning design is an approach to teaching and learning that gives students all the opportunities to succeed in life. The goal of the versatile design of education is to use various teaching methods to remove barriers to learning and build Flexibility that can be adjusted for every person's strength and need. When educators hear about universal learning design, most think it's related to technology (Zascavage & Winterman, 2009). However, the versatile learning

design is about pedagogy and instructional practices for students with and without disabilities.

The concept of universal design originated in architecture in the 1970s by Ron Mace (Center for Universal design, 1997), which contributes to having a significant influence and reflection on the building students that are now required to incorporate features. It enables more people with different needs to access the building without the need to retrofit structural details (Americans with disabilities act of 1990). In addition, the supreme quality of universally designed buildings and products allows people with unique needs to be independent and immediate.

Teachers create multiple meanings of assignation to support affective learning by tapping into learners' benefits and offering practical tasks to increase their inspiration. The concept of rhetorical devices (imaginary, symbolism) to family's learners to these concepts and engage them in the process. This framework requires teachers to change how they view the teaching-learning procedure and initially approach lesson preparation and training for all learners. Teachers develop appropriate goal designs to address the needs of a wide range of students and implement instructional approaches responsive to specific differences (Rose & Meyer, 2002).

One principle, *Flexibility in use*, is design instruction for teachers that accommodates a wide range of students' preferences and capacities. The concrete and virtual calculating demonstrations are flexible because they provide students with choices in learning, and these selections also accommodate students' needs when learning the content (Margaret King-Sears, 2001).

Equitable use is the instructional materials can be achieved via technology, such as digital texts for students with LD. However, when the instructional substantial is a textbook that is not well-designed concerning how its content is prepared, portrayed, and sequenced, educational features that increase the accessibility of the content for many focus learners (Jitendra, Deatline-Buchman, & Sczesniak, 2005; Jitendra et al., 2001; van Garderen, 2006).

Perceptible information is a varied way to present and practice curriculum content, including illustrations, tactile experiences, visible contrast of actual content from supporting details, and precise and explicit language. In addition, technology, such as virtual manipulative illustrations for mathematics instruction and software combing visual with written content, offers powerful ways to shape accommodations needed by students with LD into the instruction received by all (Suh & Moyer, 2008).

Tolerance for error is illustrated in software design that tasks students through instructional processes when mistakes are made. Some software's tolerance for error is as simple as altering students to try again, whereas other software is more inclusive in providing students a reminder of the formula or steps. Mistakes can be learning opportunities, and educators who use individualized, immediate feedback and mediated scaffolding give all students beneficial pedagogical experiences of corrective and guiding feedback (Dihoff, Brosvic, Epstein, & Cook, 2004). The types of feedback can be critical for learning how to solve problems, complete steps, or comprehend accurately and efficiently (Ebbers & Denton, 2008; Schmaker & Deshler, 2009).

The *simple and intuitive use* belief means that content is accessible straightforwardly and understanding students' background information, language skills, and concentration levels. For example, for an item of science terms organized by groups, using a graphic organizer is a more straightforward way for students to discern the differences among the words (Kim, Vaughn, Wanzek, & Wei, 2004). In addition, engaging students in various activities is a way of accommodating learners' differences in concentration. In other words, pairing new vocabulary terms with vocabularies with which students are familiar, such as pairing use and utilization, can grow students' vocabulary skills while reducing unnecessary difficulty for students who still know synonyms.

Low physical effort refers to designing activities and materials that are efficient and comfortable to use, and students will be concentrating on learning rather than fatigued. The principle can be seemingly simple, such as providing a bookmark to students who routinely lose their place in a book and then miss instruction by having to spend time finding the right page. For example, high-tech would-be providing students who have difficulty with fine motor skills and adapted keyboards. By reducing the physical energy, they have to expand in finding the desired keys, and the modified keyboard consents students to focus more of their mental powers on what they are writing (Margaret King-Sears, 2001).

Another UDL principles are the *size and space* for approach and the use is technology such as PowerPoint slides and LCD projectors, which may use to portray vocabulary and graphics; teachers need to confirm that the size of the content is large enough for students seated in different areas of the room to see the contest. Teachers' writing needs to be large enough for students to see and be presented in an uncluttered format to focus on the important content for using technology. How teachers instruct about the

vocabulary and graphics should be straightforward, such as using precise language that concisely communicates the critical range (Margaret King-Sears, 2001).

Rose and Meyer (2002) attribute Concord's success to top-down approaches to UDL implementation, including Concord's ongoing collaboration with CAST. Other top-down approaches incorporate the extensive efforts of states like Kentucky, Louisiana, Ohio, Maryland, and New York that encourage technology planning teacher education and material development supporting UDL implementation (Rose & Meyer, 2006).

The Concord Model: Key Components & Examples of UDL Implementation

Key Components	Examples
Technology Infrastructure and Support	Districts digitize materials and build collaboration between technology and educational specialists.
Administrative Support	School principals demonstrate buy-in by supporting release time for training and support.
Teacher Training and Support	Administrators and consultants listen to teachers and brainstorm solutions to identified barriers.
Redefined Roles for Special and Regular Education Teachers	Special educators assist students with and without disabilities.
Collaborative Curriculum Planning	Teachers work with consultants to reconsider curricular goals, and gather new tools and supports.
Parent and Community Involvement	Parents volunteer to support UDL within classrooms and school sites.
Creative Funding	Districts, schools, and teachers develop and submit grant proposals supporting UDL practices.

Note. Modified from Rose and Meyer (2002).

A school-wide model program utilizes best practices of UDL principles across the general education curriculum (Ender et al., 2007). The most vital object is to make students understand with and without disabilities that collaborative, multiagency approaches may ensure more effective and sustainable UDL practices within our schools. And comprehending those different text formats is attributed to a non-technological UDL with effective pedagogy for the students.

Deductive and inductive teaching techniques: The inductive method was first accepted in scientific experimental learning and mathematics in the 20thcentury. Jean Piaget first used in 1967, It emerged from "inductive reasoning, cognitive development, and constructivist epistemology (Yuen, 2009). In other words, inductive instruction is labeled as a universal term with numerous methods such as inquiry, problem-based, project-based, case-based, discovery, earning, and just-in-time teaching. They are all learner-centered and could be considered constructive methods based on the assumption that students construct their versions of reality rather than absorbing versions of their teachers (Prince & Felder, 2006).

According to Decoo, 1996, defined deduction in language learning goes from the general to specific, from consciously expressed rules to the application in language use. In deductive teaching, the grammar is first presented to the subjects. It is essential in deductive teaching because the issues are not given enough practice in the various aspects of grammar (Alzu'bi, 2015). The deductive method is connected to conscious learning. The ways tried to place great emphasis on adult learners. The teacher explicitly teaches the rules to learners, who are ready to cope with the exercises given (Hmedan & Nafi, 2016).

Deductive reasoning or logical deduction is reasoning from one or more statements to reach a logically particular conclusion. This teaching method is different from inductive methods and a more teacher-centered approach. It means that the teachers give the students a new concept, explain it, and then have the students practice using the idea.

The inductive methods arose as a subtype of explicit instruction based on audio-lingual (Shaffer, 1989). Inductive approaches are appreciated to recognize design patterns from within the practice, but deductive teaching methods support outline pronunciation. According to Fischer (1979), the

deductive method has been historically associated with the cognitive approach and the inductive approach with audio-lingual methods.

Debates learning methods: The debate is meant to explore and explore the truths through interactions that significantly impact the human mind's mental aspects (Soraya, 2005). The debate concepts for learning are used in formal systems for the collaborative learning and specific training methods with certain steps (Rahimi, 2009).

The importance of debate is the multiplicity of thoughts, and the group cooperative effort causes and discovers new issues because the learners focus on the power of their mind activity (Pajoohande, 2001). Furthermore, the connection and interactive debate engage the learner in the learning opportunities and change the structure of individual acquaintance (Rahimi, 2009).

The students should elaborate on the new knowledge that cannot be acquired only through hearing information (Fazli, 2003). And learners will understand through the information explored and experiences with the debate strategies in the classroom.

The education process and learning methods are an essential training strategy to build the future with continuous learning and engaging more with debate methods for self-confidence and speed of understanding. In addition, the logical debate process promotes social and verbal skills with efficacy and mental development.

Microlearning: Microlearning emerges from the micro-content of digital information in a permanent state of flux and circulation. It relies on human-to-human interaction and interaction with internet media. Microlearning is "an approach to learning that conveys information about a single, specific idea in a compact and focused manner" (Maddox, 2018, p. 1): Microlearning is highly effective for hard skills training because microlearning techniques map optimally onto the processing characteristics of the cognitive skills learning system and the prefrontal cortex and hippocampus that make up this system. The "processing characteristics" of these brain systems drive the success of microlearning, not the other way around. (p. 3). Microlearning can offer interesting communication with economic and social changes that trigger new concepts and strategies to support lifelong learning.

Education, including work-based learning, requires transformation and innovation. It can be understood in multiple ways, referring to micro aspects of a variety of phenomena, including learning models and concepts. It is vital in that stage of knowledge creation as many learning processes are based on observation and data collection (Anil & Habil, 2012).

Concepts of microlearning are flexible and dynamic alternatives that are for environmental changes. So microlearning is pioneer research aimed at exploring new ways of responding to the growing need for lifelong learning and learning on demand of members of the society such as knowledge workers and teachers. Therefore, developing small chunks of learning content and flexible technologies can enable learners to access them more easily in specific moments (Anil & Habil, 2012).

Digital Storytelling techniques: Storytelling methods are one of the oldest teaching techniques and engage in discussion and participation to make content for preparation for learning. The storytelling is narrative interpretation with developed powerful postmodern force. Digital storytelling can provide many significant assistances to students who have the chance to learn how to create their own digital stories. For example, students may be given assignments in which they are asked to research a topic, look for the pictures, record their voice and then choose a particular point of view. It is a process that helps to enhance students' knowledge and academic skills. Teachers should use digital storytelling to support students' learning by reassuring them to organize ideas and knowledge uniquely and meaningfully (Robin, 2008).

Furthermore, using digital storytelling in the classroom is an effective instructional technique providing an exceptional learning experience for students. According to Jakes, 2006, confirmed digital storytelling helps students explore the earning of their own experiences, give value to them, and communicate the experiences on multiple levels to others.

Conclusion

The 21st. Century's classroom environment differs from the traditional teaching environment and warrants different types of active learning techniques. A wide variety of psychological, sociological, and pedagogical literature has documented that student populations are composed of individuals with distinctly different active learning styles such as behaviorism, constructivism, connectivism as a learning theory, Universal Design for Learning (UDL), deductive and inductive teaching techniques, debates methods, micro-learning, and digital storytelling technique. Therefore, the use of active-learning techniques not only benefits students by allowing them to practice skills and ask questions but also benefits instructors by allowing them to assess

the student's understanding and remediate essential points on a nearly "real-time" basis (Brown & Freeman, 2005). For instance, by using a Universal Design for Learning framework, teachers can enhance their capacity to meet the range of students' needs in the general education classroom, successfully adopting students' participation.

In a nutshell, the lecture is a part of teaching effectively. However, other factors such as interactive methods with the students, encouraging higher-order thinking skills, and teaching students the skills and the cognitive process are vital to completing an assignment and the disciplinary tasks. The highlight is that the most frequent concern for the developing cognitive subject is the interaction with others. (Von Glasersfeld, 1989).

Similarly, these interactions with the students may require different active learning techniques to enhance classroom engagement. The benefits of various active learning techniques are documented in the literature. However, there is a lack of quantitative studies investigating the natural effect of different active learning techniques on learning enhancement and classroom participation. There is a need to explore educators who have experienced ALFs regarding how different ALFs have affected student engagement and involvement in the structure of building knowledge. Quantitative survey data may then help generalize the research results.

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