UNDERSTANDING THE ROLE OF ORIGAMI IN TEACHING AND APPLYING THE ACTIVITY ANALYSIS PROCESS IN OCCUPATIONAL THERAPY EDUCATION: A PILOT STUDY

ABSTRACT

A critical component of the occupational therapy process is activity analysis, as because it helps address the clients' needs and values. Outcomes are determined by the effectiveness and meaningfulness of the activity analysis. As Hammell (2020) argues, occupational therapy practitioners help clients navigate life after an occupational disruption. It is often a complex and challenging concept for students to understand. To capture the attention and interest of students, educators must incorporate a variety of teaching methodologies and techniques. Occupation-based learning helps facilitate self-direction and the development of critical thinking skills for problem-solving. Problem-solving and critical thinking are essential for activity analysis and treatment planning. For this study, occupational therapy educators implemented occupation-based learning to foster students' learning and to gain a better understanding of the activity analysis process through origami. The purpose of this study was for occupational therapy students to analyze the components of origami and explore their understanding of and comfort with the activity analysis process.

Plain Language Summary

Occupational therapy educators help students with breaking down an activity to understand the components needed for an individual to complete a task successfully. This is called activity analysis. In an effort to help students understand the activity analysis process, the Occupational Therapy faculty and an Origamist (authors of this paper) created an interactive learning activity to teach students about the history, meaning, and activity analysis of origami. The authors of this paper wanted to determine if such an experience would help students better comprehend and apply the activity analysis process. They asked students to tell them what they liked and did not like, what they learned, and how (if at all) the learning activity enhanced their understanding and ability to apply the activity analysis process. Overall, students found it useful and valuable. Findings from this study can help improve future teaching in occupational therapy and other healthcare fields.

Key Words: activity analysis, education, occupational therapy practitioner, occupation, origami

INTRODUCTION

Origami plays an important role in both art and science. Folding uncut sheets of paper, usually squares or realistic subjects has been adopted to explore new ideas, opportunities, and solutions across different disciplines. Originating from Japanese culture, origami is a form of art involving folding paper to create various shapes and designs. The word ‘ori' means folding, and 'kami' means paper (Cakmak et al., 2014). Around 1200 A.D. origami developed rapidly in Japan, including more complex models (Abate, 2020). After 1577, origami spread to all levels of society (Abate, 2020). The year 1800 A.D. was the first year that origami was integrated into natural science (Abate, 2020). It became an important tool for teaching and research. Origami is not only an activity, but it adds an educational and meaningful value to the field of art and science.

Occupational therapy practitioners (OTP) use meaningful activities that can assist individuals in maximizing their independence in ADLs/IADLs. Through the activity analysis process, an (OTP) examines an activity to identify cognition, motor, sensory, and emotional components. An activity analysis can determine the potential therapeutic benefits for an activity (Breines, 2006). Understanding the skills and knowledge required of the activity is an essential component of the occupational therapy process (Crepeau et al 2003). An OTP assesses and identifies the strengths, abilities, equipment, tools, and materials required for the activity. Being able to identify these factors allows OTPs to determine the needs of the client, and establish clear treatment goals and strategies to assist the client with goal achievement. Activity analysis can be used to identify activities that can be therapeutic for a client and to suggest suitable adaptations and modifications (Lamport et al 1996).

The idea of occupational engagement impacting the health and well-being of people is the primary focus of the profession. As the scope of practice for OTPs has broadened, new practitioners must have enhanced clinical reasoning, problem-solving, interprofessional, evidence-based practice, and leadership skills and abilities (Brown, Crabtree, Mu, & Wells,

2015). Each occupational therapy student must demonstrate competency in the activity analysis process. Understanding this process can help students break down an activity into all its components, analyze the client's overall performance, and address the occupational needs of clients. This process indicates the problem areas and areas of improvement to enhance one's quality of life. Although the activity analysis process can be challenging, it is essential to find the means of engaging a client through activities that are purposeful and meaningful.

LITERATURE REVIEW

Origami can be a meaningful and influential intervention that can be broken down into several components. Origami is a fun and engaging activity that addresses numerous occupational skills and can be applied to numerous disabilities and a wide variety of settings (Lipnick, 2012). It is an activity that encourages freedom of expression among individuals. The activity is simple, clean, and easy to manage. Additionally, origami could be used as an intervention to address visual sequential memory, eye-hand coordination, spatial ability perception, cognitive skills, patience, perseverance, concentration, attention, and additionally, research has shown that creating origami has a positive effect on attention span and concentration (Kanazawa,2016). The use of Origami has been studied among different professions due to its numerous benefits for the human brain and body. Origami is valuable at a neuronal level; it benefits the brain (Kobayashi & Yamada, 2013). Researchers found that origami activities correlate to good bilateral coordination, one of the good interhemispheric interaction attributes. When the left hemisphere functions become active: right-hand control, written and spoken language, numerical skills, reasoning, and scientific skills (Kobayashi & Yamada, 2013). At the same time, the following right hemisphere's function became active: left-hand control, insight, imagination, and music and art awareness (Kobayashi & Yamada, 2013).

Origami in Occupational Therapy

Origami has been shown to be very useful as an assessment tool and therapeutic intervention used by different professionals, including occupational therapists, speech therapists, art therapists, psychologists, psychiatrists, and a small number of social workers (Hershenson & Issacson, 2015). An assessment is the process of data collection to identify the client's strengths and deficits. Interventions are designed to facilitate clients' engagement in occupations and improve health and well-being (AOTA, 2020). The activity appeals to a wide range of ages since it is easily adapted according to the developmental stage and needs of the individual. The strength of origami is that it can be done almost anywhere and anytime with minimal preparation (Lipnick, 2012). It is an inexpensive activity that can be used to assess coordination, visual sequence memory, fine/gross motor control, manipulation, and attentiveness (Sandra Adetya & Gina, 2022).

Origami in Education

Recently origami has made its way into education. Studies have found that origami has improved students in many ways, including the development of cognitive, social, and motor skills. Not only in primary and secondary education. Some higher educational institutions have also introduced several optional courses related to origami to introduce this education to prospective educators in Turkey (Arsalan, 2016). The use of origami has been applied in several professions such as engineering, architecture, furniture design, interior design, landscaping, fashion, and more (Ariandini & Martono, 2013; Marji et al., 2023). Using origami in the

classroom is its practical nature, which involves students in the learning process. Origami requires students to concentrate their attention and use their hands to manipulate paper, which can improve fine and gross motor skills (Sandra Adetya & Gina, 2022).

The use of origami in occupational therapy education teaches students the activity analysis process. Activity analysis breaks an activity down into its steps and its detailed subparts while examining all its components with each activity being evaluated skillfully to determine its therapeutic value. (AOTA, 2020). These are the underlying motor, sensory, and cognitive skills and abilities required to perform an activity. For example, there is a difference between knowing you need to grip something (a task demand) and having the hand strength to do it (a motor function) (AOTA, 2020). Every individual brings their own set of strengths, challenges, and experiences to an activity. This includes body functions, beliefs, values, and lived experiences. During the origami activity, students learned activity analysis to gain a comprehensive understanding of what an activity entails and how it can be modified or adapted to match one's current abilities.

METHODOLOGY

The research study was approved by the Institutional Review Board at Winston-Salem State University in Winston-Salem, North Carolina. Using a qualitative approach to capture each participant's' knowledge of the activity analysis process, what was challenging, beneficial and how did the experience enhance the understanding of the activity analysis process. There was one open-ended question on the pre-survey and five open-ended questions on the post-survey in which participants were asked to reflect on their overall experience. The researcher reviewed transcripts, identified initial codes, and categories, and described major themes within the study.

Participants

Thirty-five first-year occupational therapy and occupational therapy assistant students were recruited to participate in this study. The inclusion criteria were enrollment as a full-time, first-year student in the occupational therapy and occupational therapy assistant program. This study used convenience sampling to gather students who were already enrolled in occupational therapy programs to participate in the study.

Data Analysis

This study used inductive reasoning to determine how origami can be beneficial for teaching first-year occupational therapy students about activity analysis through pre and post-surveys. The different analysis tools used in this study were Microsoft Excel/Forms and Zoom platforms. Microsoft Forms was used for the pre/post survey that researchers created. The pre-survey was created using a Likert scale and two open-ended questions relating to questions about understanding origami and activity analysis. The post-survey was created using Likert and five open-ended questions to capture the participants' learning experience. Microsoft Excel was used for data interpretation of the pre-survey results to be able to clearly identify how many people chose strongly disagree, disagree, neutral, agree, or strongly agree. Completed surveys were

reviewed, and responses were analyzed using the Microsoft Excel data analysis computer software program. The researchers looked at similarities in the participants.

RESULTS

Participants identified the activity analysis as an essential process for breaking down and understanding the components of an activity. By analyzing the steps involved in completing an activity, participants reported that they gained clarity on what was required in terms of resources, time, skills, and tools. This process is pivotal for optimizing efficiency and ensuring quality task execution.

The environment was the most challenging during this learning experience. Participants reported that it was not conducive to learning and performing Origami efficiently. Due to the limitations of a virtual setting, the lack of direct, hands-on guidance from the instructor created difficulty in understanding the proper technique. Connectivity and video quality issues during the Zoom session interfered with clearly seeing the instructor's hands or the paper being folded, leading to misunderstanding the necessary folding. These environmental barriers created frustration and slowed down progress, as participants could not directly observe the folds or ask questions face to face. This confused students, who may have made mistakes without realizing them, requiring them to backtrack or rush through steps, potentially leading to incomplete or incorrect results.

Paying close attention and focusing on detailed steps, participants stated that they were able to connect cognitive processes (like following instructions and problem-solving) with motor skills (such as hand-eye coordination and finger dexterity). These connections highlight how learning activities like origami can integrate different aspects of learning and skill development, from the mental process of understanding the steps to the physical actions of folding and manipulating the paper.

The origami experience enhanced participants' understanding of the activity analysis process by encouraging individuals to follow a structured sequence of steps, which mirrors the way activities are broken down in occupational therapy. By carefully following each fold and instruction, participants learned to appreciate the importance of sequencing in any task, as well as the relationship between individual actions and the overall outcome.

Participants reported by observing how other students approach the same activity, students can gain insights into alternative methods or problem-solving strategies. This peer learning reinforces their understanding and broadens their perspective on how to approach complex tasks or processes.

DISCUSSION

An OTP believes that an individual can improve physical, cognitive, and social participation through meaningful and purposeful activities. Meaningful, purposeful activities can be used by OTPs to help increase client function. This includes taking into account the client's occupational history, preferences, goals, and needs (Ishikawa et al, 2024). This is applicable in clinical and academic settings. An occupational therapy educator has the same responsibility as a clinician to develop and implement student-centered learning. Active learning methods and techniques lead to stronger academic performance outcomes (Stes et al., 2010). THIS REFERENCE IS NOT

LISTED IN YOUR BIOGRAPHY??This pedagogy allows students to integrate and analyze information more effectively. There is a substantial amount of responsibility, as an occupational therapy educator, to ensure that what is taught meets students' learning needs.

Literature supports the use and development of educational strategies that involve theoretical and practical approaches to facilitate increased student awareness, knowledge, and ability to adapt interventions (Bar & Ratzon, 2016). Activity analysis courses are effective in increasing student knowledge, awareness, sense of competence, and interest in addressing the accessibility needs of individuals with disabilities. (Bar & Ratzon, 2016).
It is often taught as part of foundational courses in which students develop and learn about the concepts of occupational therapy. Other courses within the curriculum build on these concepts to meet course learning objectives. As a beginning course, students learn how to analyze any human and non-human components that are required to fulfill their identity. Occupation is a fundamental human behavior that is explored and analyzed. Students explore the complexity of analyzing occupational engagement and the demands of daily activities on human performance. Understanding the activity analysis requires an examination of physical and cognitive components that impact health and therapeutic outcomes. A complete activity, origami requires focus and perseverance to follow instructions to produce an outcome. Having students engage in an origami activity requires them to actively engage and apply many skills, promoting creativity and problem-solving skills. The student's learning experience of activity analysis improved due to being able to practice and receive feedback.

CONCLUSION

The purpose of this experience was to determine student learning of the activity analysis through origami. According to the results, students gained a better understanding of the activity analysis process. Students indicated that they understood the physical and cognitive components of how to apply according to the client's needs. As they have different learning needs and styles when compared to adolescents, adult occupational therapy students can benefit from a variety of alternative methods of teaching (Krishnagiri et al., 2017). The origami learning experience produced a higher-level learning outcome and the opportunity to practice a new activity, receive immediate feedback, compare results with peers, and collaborate in dyadic groups. The opportunity and experience facilitated learning of the activity analysis process. Origami is a student-centered learning experience that improves creativity, and creates fun but challenging conditions that provide an occupation-based learning experience (Van Der Horst & Albertyn, 2018). Participants in this study demonstrated an understanding of activity analysis and the therapeutic value that it has in occupation.

Limitations

The limitation of this study was the small sample size. There were thirty-five students enrolled as first-year students in the Department of Occupational Therapy at Winston-Salem State University and Rowan-Cabarrus Community College. The Occupational Therapy Foundations course is taught during the fall semester. However, this study was conducted during the fall semester whereas the course was offered during the fall and spring semesters. Conducting origami instruction virtually presents several challenges that can hinder effective learning. Common issues include students' ability to follow the instructor's speed, leading to confusion and frustration. Visibility due to limited camera angles or poor lighting made it difficult for students to see the instructor's hands and the folding process. Audio quality impedes

understanding verbal instructions. Internet Connectivity: Technical issues like lag or disconnections disrupted the flow of the session.

Implications for Further Research

More research is warranted to determine the impact of occupation-centered learning. Research in these areas could benefit future leaders in the rehabilitation profession and patient care. Research is needed to understand what aspects of student education were most helpful for increasing their understanding of activity analysis and occupation. Determining specific teaching methods and approaches educators used to implement occupation-centered education in the classroom, are critical before students entering their level II fieldwork. Understanding student perspectives on what helps them to comprehend the concept of occupation could also be useful in supporting curriculum design and education approaches.

The Knowledge Take Away

This article describes the impact of an interactive learning activity on the application of activity analysis. The tutorial offers unique interactive instructional strategies through the use of Origami. Not only does Origami address fine/gross motor coordination, and visual and tactile skills; however, but it can also be used to teach occupational therapy students the importance of activity analysis. Whether an activity needs to be graded up or down to meet the clients' skill level.

Competing Interests

The authors of this research declare no competing interest regarding this study.

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