

# Incorporating experiential learning theory into postgraduate training for paediatric epilepsy.

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## Abstract

**Status Epilepticus (SE) is a critical medical emergency in pediatric neurology, characterized by continuous seizures or recurrent seizures without recovery, which poses significant morbidity and mortality risks. This paper investigates the application of Kolb's Experiential Learning Theory (KELT) to develop a structured teaching plan for pediatric residents at King Abdulaziz University Hospital (KAUH) in Saudi Arabia. The proposed plan, spanning a one-week course, emphasizes practical, interactive and reflective learning tailored to the treatment of SE, addressing the limited availability of structured training in this domain.**

**Grounded in KELT's four-phase learning cycle-Concrete Experience (CE), Reflective Observation (RO), Abstract Concepts (AC) and Active Experimentation (AE)-the plan integrates simulations, group discussions, theoretical instruction and supervised clinical practice. The CE phase employs low-fidelity simulations to immerse learners in realistic scenarios, while the RO phase fosters critical reflection through peer discussions and written analyses. The AC phase introduces theoretical foundations using didactic and computer-based tutorials and the AE phase provides hands-on clinical opportunities to apply learned concepts.**

**Keywords:** Status epilepticus, Neurology, Mortality, Morbidity.

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## Introduction

Status Epilepticus (SE) is a common medical emergency in children. This neurological disorder presents a high rate of morbidity. It has a mortality rate of 3%-50% and between 1% and 16% of epilepsy patients will experience this emergency in their lifetimes. Lowenstein, Bleck and Macdonald suggest both an operational and mechanistic definition of SE. Operationally, SE is defined as continuous seizures lasting longer than five minutes or two or more seizures without the patient regaining consciousness in between. A mechanistic definition refers to the failure of those factors generally responsible for terminating generalized tonic-clonic seizures. Because of its emphasis on treatment rather than pathology, this teaching plan concentrates on the operational definition. Nevertheless, both are pertinent to a complete picture of SE [1].

Epilepsy and other seizure disorders are not uncommon in the middle east. The overall prevalence of epilepsy in Saudi Arabia is 6.54/1000. At present, Jeddah's King Abdulaziz University Hospital (KAUH), one of the largest teaching hospitals in Saudi Arabia, offers few structured teaching plans delivering content related to the treatment of SE. This research paper investigates the potential application of Kolb's Experiential Learning Theory (KELT) to paediatric post-graduate training for the treatment of epilepsy. During a one-week course, the proposed plan will enable paediatric residents to acquire and test an organized treatment approach to SE. This paper is

intended to support a practical curriculum and teaching plan for paediatric residents on rotation in the neurology department of KAUH [2].

## Literature Review

### *Theories and principles*

Because of the sudden onset and medical urgency of the disorder, SE treatment benefits from learning modes that are interactive and engaging. The present plan is grounded in experiential learning, a set of theories holding that (a) learning is a continuous process that is based in experience and (b) experience is transformative and leads to the production of knowledge. One of the names closely associated with experiential learning is David A. Kolb, whose synthesis of learning theories from John Dewey, Karl Lewin and Jean Piaget has been applied to the development of an array of pedagogic and andragogic programming [3].

KELT emphasizes four phases in the learning cycle that are derived from Lewin's model of experiential learning: Concrete Experience (CE), Reflective Observation (RO), Abstract Concepts (AC) and Active Experimentation (AE). The four phases are roughly equivalent to the acts of feeling, watching, thinking and doing. These phases are part of a continuous cycle; as such, the trainer or developer of the curriculum must establish at what phase their teaching plan should begin.

Because the trajectory of learning goals is based on information feedback between phases it is important that, once determined, the phases follow the correct order [4].

Context and participation are crucial considerations in designing experiential learning plans. This means that curriculum developers must understand how to discern as well as incorporate concepts and real-life activities. Given the dynamism of andragogic environments in general (and medical environments in particular), there is no guidebook describing categorically how this ought to be done. However, there are several principles that may be included in designing and implementing a KELT SE course for post-graduate learners:

- The appropriateness of collective versus individual learning processes to the present learning situation
- Promotion of authenticity in simulation and practice-based experiences
- Awareness of cross-contextual application of learning plans

Barlas et al. suggest that teaching hospitals account for the learning styles of their residents when developing emergency medicine programs. The authors' research demonstrates that the learning preferences of residents can determine the effectiveness of teaching methods. For example, residents found traditional didactic methods such as lectures because of their lack of engagement. Bye et al. note that, in the context of treating paediatric epilepsy, learning engagement is positively linked to the development of clinical reasoning or abstract concepts, in the KELT framework. These insights are highly relevant to the design of a KELT-based SE program and could be implemented in the assessment stage of program development [5].

## Discussion

### *Application*

The current plan's application model incorporates each of the KELT phases. Deciding where to begin in this continuous process prompts us to reflect on both the pragmatic and theoretical contexts of implementation. Should learners begin in the more traditional AC phase before approaching more complicated, hands-on scenarios? And are reflection and observation less effective without a full array of preceding activities? Given that the process is continuous, RO may be repeated after a full learning cycle. CE is nominated as the initial phase due to the fact that the learner has undoubtedly met with some elements of analytical learning about epilepsy prior to engaging with this teaching plan. As such, the notion that her mind is a tabula rasa should be rejected [6].

The CE phase will use low fidelity-based simulations to allow residents to experience some of the challenges involved in treating epilepsy. Residents will experience immersion in concrete experience and learn through shared transformative experience.

In the RO phase of application, participants will focus on the process of careful observation preceding medical decisions. This will involve the formation of small groups where

discussion about the CE phase will provide the structure for feedback regarding technique, approach to patients and the development of future objectives. Learners will receive discussion questions and statements geared towards promoting reflection. For example: How do seizures affect learning ability? Do seizures affect work and employment? What are the emotional and psychological impacts of seizures? What are the social impacts? Ideally, participants will produce short, written reflections on their feelings and experience before and after the CE phase. Peer review will allow for enrichment of perspective and will enhance critical thinking [7].

Learning by thinking involves the analysis of ideas, principles and theories concerning SE. The AC phase of the application incorporates traditional didactic methods for teaching about epilepsy syndromes. It may employ either face-to-face or computer-based tutorials, which Bye et al. have demonstrated to be an effective means of facilitating knowledge acquisition. Thus applied, AC responds to one of the fundamental criticisms of KELT; namely, that the theory relies too heavily on the creation or recreation of knowledge through implicit teaching and that certain subjects require an explicit approach [8].

In the final phase of application (AE), residents will be given an opportunity to treat and/or monitor epilepsy patients in a supervised ambulatory setting. Learners will record patient history and perform initial assessments, including physical examination and the chance to propose management and follow-up plans [9].

### *Self-critique*

To evaluate the proposed plan, the author performed a frank SWOT analysis. In terms of the programs strengths, the analysis showed that it is tailored to learner interests and needs as evinced in Barlas et al. Next, a KELT-based SE module would be relevant to residents' future practices in a general since it will facilitate discussion, reflection and collaboration as familiar approaches to treatment. Last, this teaching plan is easily expanded for PGY2-4 (psychiatry residence programs). In terms of weaknesses, the preparation of teaching material and program implementation are both time-consuming. Further, dependent of the budget and availability of skilled teachers and equipment, lack of resources may hinder implementation. Opportunities include marketing the program for use in health centres other than KAUH or the adaptation for use in a variety of health care professions. However, the security of the proposed plan is threatened by competition from similar, well-established programs in other urban centres and the prerogatives of the relevant accreditors [10].

## Conclusion

This paper has outlined a proposed method for teaching SE treatment to paediatric residents on rotation in the neurology department at KAUH. This plan is grounded in Kolb's experiential learning theory, which emphasizes the continuity of learning and the significance of experience in knowledge creation. As such, the plan has four phases: concrete

experience, reflective observation, abstract concepts and active experimentation. Each of these phases addresses a dimension of learning; taken together they offer a holistic view of SE treatment. The author recommends that this KELT program be implemented in a trial format involving a portion of post-graduate students (either through invitation or volunteering). In this way, the success of the program may be assessed in contrast to a control (standard programming).

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