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I confirm that I have not used any AI tools in the research and creation of this assignment. I confirm that I have not presented any AI generated materials as my own work. I confirm I have copies of my drafts, notes, and other resources I used, which I may be asked to provide in evidence.

CASE REPORT



BACKGROUND TO THE REPORT

This case report serves as a means to examine and evaluate a situation that requires future improvement. In this instance, the nurse handwashing policy has been violated resulting in one fatality and seven other infection cases.

Nurses have to pass both a written and practical examination in an attempt to ensure guidelines such as the National Infection Prevention and Control policy (NHS England, 2022) are adhered to, subsequently ensuring the safety of patients. Despite these rigorous training measures, attenuation to these procedures were suboptimal.

In a statement from the Health Board, they implied that leading up to this incident, staff shortages and an increase in patients resulted in nurses working in suboptimal conditions including longer hours, back-to-back shifts and twice the amount of patients they would usually attend to.

This Case Report will utilise the Cognitive Load Theory (CLT) (Sweller, 1988) to explain why the event occurred, subsequently using notions presented to devise a plan to ensure the continued safety of both the patients and nurses.

THE COGNITIVE LOAD THEORY

The CLT (Sweller, 1988) suggests that there are three separate types of Cognitive Load (CL): Intrinsic, Extraneous, and Germane. Subsequently, when these three loads are overwhelmed, various interactions in tandem with each other result in poorer working memory, learning ability, hinder workplace performance, and increase errors (Plass et al., 2010).

Intrinsic Cognitive Load (ICL) is a necessary load based upon one's prior knowledge and the rate at which the information is being fed to the individual; it is the inherent complexity of the task or knowledge at hand (Baxter et al., 2025; Sweller, 2024). This subsequently implies that if the difficulty of the task or information is too high for the individual, one may become overloaded, which may have an adverse effect on performance or learning. This is shown by Ayres et al. (2021) who conducted a systematic review with 33 experiments, they found that when CL increased, a reduction in performance was present across the studies in various sections including memory. This implies that when an individual is overloaded with information or their intrinsic load is compromised, they may perform worse across a number of sectors.

Extraneous Cognitive Load (ECL) differs from the ICL; ECL suggests that although ICL is vital to CL, the way in which information is presented can also play a large role in overloading an individual's cognitive function (Sweller, 2024). They go on to imply that ECL looks at the way in which information is transferred into the Long-Term Memory (LTM), with poor quality and interaction within that process having adverse effects on one's performance in a range of tasks. This ideology is presented by Beege et al. (2020) who demonstrates the effect visual cues can have on learning in comparison to solely text-based information; the 138 university students' results implied that the use of visual cues alongside text resulted in better information transfer to performance. This implies that text-based learning and subsequent transfer to performance may not be best served as text alone. However, this study does not suggest how the transfer to performance was studied or whether this study could be replicated in a workplace scenario. This notion is demonstrated by

Kalyuga et al. (2004) who imply that during three studies conducted on 25 technical apprentices receiving information in two separate ways (Audio and Visual) may increase cognitive load, consequently implying that one should only use one medium of learning to best retain information.

Additionally, Germane Cognitive Load (GCL) as the process of intentional commitment to ensuring cognitive Schemas become autonomous in the LTM (Debie & van de Leemput, 2014). Atiomo (2020) indicate an example of this would be when a student enters a new class but has experience of a different course with some similar elements, their GCL would be optimized and would perform better on sections of the new course which correspond with their previous course.

HOW DOES THE THEORY RELATE TO THE CASE STUDY

CLT (Sweller, 1988) provides a means to understand how the events presented in the case study occurred in relation to the increase in shifts, patients, and workplace shortages. Additionally, it may also indicate why the incident occurred a multitude of times regardless of the nurses being administered both a written and practical examination, directly linked to the issue, prior to being allowed to visit patients. The notions present in CLT, imply that when CL is increased under tasks, learning or environments which are deemed to be stressful, performance is hindered significantly (Paas & van Merriënboer, 2020). When this is put in tandem with nursing as occupation, which is suggested to be the most stressful health care occupation (Roberts & Grubb, 2013), it becomes evident that Intrinsic and Extraneous Cognitive Load are being overloaded potentially leading to errors.

ICL (Sweller, 1988) infers that the complexity of the task and the rate of which information is provided, is what may overload one's cognition, subsequently leading to an increase in errors (Baxter et al., 2025). Although the issue at hand (Handwashing) may not be inherently complex, Ghadirian et al. (2014) suggest that Nursing is a highly complex profession which relies on ones physical and cognitive abilities to be working at their highest

possible standard. This, combined with an examination prior to being able to work as a nurse in this capacity may lead to an increase in ICL, resulting in poor retention of information and subsequent performance (Pengelley et al., 2023).

Additionally, Tabatabaee et al. (2014) suggests that when ECL is overloaded, it has a large impact on decision making, with Nursing students showing worse decisions when ECL is overloaded in comparison to ICL being overloaded. This demonstrates how irrelevant information which is conveyed in a manner which is deemed to be poor can have a negative effect on one's performance and decision making; this insinuates that due to an increase in information from short staffing and an increase in patients, Nurses may be making worse conscious decisions due to an overload in ECL.

Overall, GCL, ICL and ECL all cumulate in order to create CLT. Individually they can all have their impacts both positively and negatively on one's performance. This is best demonstrated by Galy et al. (2012) who implies that ECL, ICL and GCL all combine to influence, working memory, performance and mental load; time pressure, task difficulty and alertness can all have a large impact on CL.

EXAMPLES IN THE LITERATURE OF THIS LINK FOR THIS SCENARIO

A study by Meguerdichian et al. (2016) demonstrates how the limits of working memory, due to CLT, can effect routine procedures in a clinical setting. They go on to say that poorly structured working patterns and task complexity can lead to ECL, subsequently reducing one's ability perform. This is further argued by Caruso (2014) who suggest that poor working patters are directly linked to increases in incidents and errors with an increase in working hours leading to a risk increase of up to 17%. This is subsequently backed up by Holden et al. (2011) who imply that being rushed and having divided attention in the workplace is positively correlated with an increase in workplace errors. This suggests that in relation with CLT, there are a number of contributing factors that could influence one's ability to perform and retain information.

Additionally, Liu et al., (2026) suggest that although generally Nurses demonstrate high levels of adherence with guidelines and policies, organisations should look to optimise GCL and reduce ECL in order to further Nurses understanding of policies and guidelines subsequently improving their adherence to policy. Although adequate training was provided to each nurse prior to caring for a patient, it is likely that due to the way and speed the information has been provided (ICL) and the external pressures that Nurses are accruing (Due to decreases in staff and increases in patients) (ECL), they are failing to show competence when recalling policies and procedures, subsequently putting themselves and patients at risk.

These studies, in tandem, create the means that CLT (Sweller, 1988) can apply to the case study in a plethora of ways; Nurses are facing an increase in hours and patients to care, whilst also having to ensure that all policies and procedures are followed; these increases ensure that ECL is being overloaded. ICL may also be at fault here, with Nurses

receiving information both verbally and visually, with the addition of an exam potentially causing stress and impacting ICL and the application of policy and procedure to the workplace.

SUGGESTIONS FOR NEW PROCEDURES BASED ON THE THEORY

Within CLT it is suggested that errors occur when an individual either cannot sustain the rate of which information is being produced (ICL) or the way the information is being delivered is insufficient (ECL) (Sweller, 1988). The issue at hand is that Nurses who are under increased stress and exhaustion, due to more patients and less staff resulting in longer and more frequent shifts, are failing to adhere to the Handwashing Policy that is in place. To prevent reoccurrence of such an issue, intervention is required in early training and education. The initial underpinnings of CLT suggest that working memory is hampered by ones cognitive limits (de Jong, 2010) and subsequently, to ensure policies and procedures are followed, in times of increased stress and exhaustion, one should look at the variables they can control; this includes reducing ECL by delivering information in different ways, such as visual learning and avoiding splitting ones attention where possible (Chandler & Sweller, 1991; Eesee et al., 2025).

It is stated that all Nurses must first pass both a written and practical exam prior to being able to do their job and visit patients. However, according to CLT, ensuring ECL is kept to a minimum is essential to ensuring positive learning and information retention, this requires information to be delivered in such a way that ECL can be allocated to Working Memory (WM) rather than related thoughts such as, thoughts of failure or the learners setting (Paas & van Merriënboer, 2020). This is particularly relevant as exams are thought to increase distraction and increase a student's fear of failure (Owens et al., 2012) subsequently leading Ashcraft and Kirk (2001) to imply that anxiety results in lower levels of WM, with individuals showing higher error rates. However, In a study by (Renkl and Atkinson, 2016), they found that learning fading procedure reduces ICL, subsequently promoting GCL leading learners to have better long term retention of information. They propose that initially one should be presented with already worked out examples, reducing ICL by building the Nurses knowledge prior to promoting their GCL by giving them a situation to work out themselves, promoting GCL. This implies

that rather than an examination, the Health Board could look at providing example-based work prior to giving the Nurse situational work, subsequently improving WM and reducing CL.

The occurrence of death within healthcare is a common occurrence, with errors being one of the leading causes of Death (Rodziewicz et al., 2024). Poor shift patterns may have a consequential impact on one's ability to recall information and retain focus (Health and Safety Executive, 2022) subsequently increasing ECL. In a study conducted by Nantsupawat et al. (2021), it was found that within a participant pool of 1,188 Nurses, a common theme of adverse consequences in healthcare was higher patient to nurse ratio and poor staffing measures. This subsequently increases fatigue and splits attention further, subsequently leading to an increase in ICL and ECL, leading to more errors (Health and Safety Executive (2022)). Subsequently, an effort should be made to better distribute shifts and patient care among Nurses, with additional measure put in place for recruitment and retention.

Finally, through a Intervention Component Analysis, Sands et al. (2020) were able to identify issues within the handwashing policies and gain a better understanding of what interventions could be utilised to prevent further infections. They suggest that the creation of goals and consistent feedback and monitoring saw better results than providing Nurses with access to things like hand gel in an attempt to promote better usage of the hygienic product. In relation to CLT, utilising plans and goals are essential in ensuring that ICL and ECL are maintained to a reasonable standard, allowing for less CL, subsequently allowing individuals to utilise WM better and reduce error rate (Kalyuga, 2026).

Overall, the utilisation of CLT (Sweller, 1988) to the handwashing policy suggests that a range of changes should be made to reduce the risk of any further infections or incidents; changes in initial learning and examination processes, an increased effort in recruitment and retention with the addition of better shift and patient management and finally Intervention attempts proposed by Sands et al. (2020), all present ways to reduce ECL and ICL whilst increasing GCL.

EVALUATION AND CRITIQUE OF THEORY

One initial critique of CLT (Sweller, 1988) is presented by Brunken et al. (2003) who suggest that the measures presented within CLT can sometimes be difficult to measure in isolation. They continue by suggesting that a reversal effect may be present when attempting to study CLT, they found that although CL scores were low when tasks were easy and positively correlated with task difficulty, when the task exceeded the individuals level, their CL scores dropped again. This suggests that an individual may disengage with a task rather than it being cognitive overload. In relation to Nurses, this may mean that rather than ones CL being the issue, due to an increase in shifts and patients to care for, the Nurse may simply disengage from the task, leading to errors.

Additionally, Moreno (2009) implies that although the contribution of CLT in setting out guidelines to optimise high performance in learning and how information can be presented, it does neglect the idea of learner motivation. They go on to suggest this is particularly detrimental to the theory as empirical evidence suggest that there is a clear link between learner motivation and how they engage with tasks, especially when difficulty becomes higher. This is further suggested by Plass and Kalyuga (2019) who imply that CLT does not account for emotion and motivation, however, if considered under revision, it would allow one to use CLT to form instructions in a more productive manner subsequently influencing the cognition of a learner behind a task.

However, CLT (Sweller, 1988) may be incredibly valuable for those with WM issues, due to an increase in fatigue or stress. They go on to suggest that CLT is now being utilised outside of classrooms, specifically in health care settings, enhancing engagement in programs and aiding policy makers (Baxter et al., 2025). Additionally, Zaphir et al. (2024) suggest that CLT provides the means for one to understand how stress, work environment and fatigue can influence CL and subsequently understand that WM is limited and if these measures are not mitigated, errors become more frequent.

Overall, CLT (Sweller, 1988) provides a tested way to understand WM and the consequences that may occur if one does not manage ICL and ECL in tandem. However, issues in negligence to other

aspects of learning and a disregard for learners disengaging in tasks suggests that CLT may require refinement to better understand WM. However, other cognitive approaches such as Attentional Capacity theory (Kahneman, 1973) may be used in unison with CLT as it specifically uses motivation in a way to determine how much effort one puts into a task, subsequently improving notions presented in GCL (Kahneman, 1973; Plass & Kalyuga, 2019).

CONCLUSION AND RECOMMENDATIONS

In conclusion, this report has looked at the issues presented by the Local Health Board, where Nurses have misused the handwashing policy, leading to a number of infections and a fatality. By using CLT (Sweller 1988), one has outlined the potential reasons why such an event may occur. Additionally, through the use of CLT one has also determined the potential ways in which interventions can be implemented from various points in the Nurses occupation including intervention at an educational level. Empirical evidence presented by Meguerdichian et al. (2016), Holden et al. (2011) and Liu et al., (2026) have presented the various ways in which the CLT can apply to this event. However, critiques present throughout this report showcase the various limitations of the application of this theory to the workplace. However, the Attentional Capacity theory (Kahneman, 1973) provides a way to combine theories with the CLT (Sweller, 1988) and improve short comings, subsequently strengthening the idea of theory based intervention.

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