The role of ICTs and a theoretical approach for behavior Problems in classrooms

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Abstract

Behavior is seen as a relative concept evaluated, studied, and comprehended in one's own and more extensive social context. As a result, different people may categorize the same activity as anticipated, beneficial, problematic, or harmful. Nevertheless, behavioral problems in childhood, which are the most common forms of interpersonal and social dysfunction, significantly impact a child's capacity to adapt to all levels of schooling. This essay looks at the behavioral problems in the classroom and how ICT helps control them. It seeks to define problematic conduct and its causes, its consequences on the learning environment and student relationships, and the teacher's obligations to prevent, lessen, and vehemently intervene to assist the students in resolving their problems.

Keywords

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1. Introduction

Determining whether a particular behavior is typical or unusual is sometimes quite challenging. Researchers have thus developed several standard criteria, such as whether the behavior harms the child or their surroundings, the socio-cultural norms of the localities where they live and study, and the frequency and seriousness of the conduct (Greenhalgh, 2001). The most prevalent behavioral issues in the classroom are ADHD (Attention Deficit Hyperactivity Disorder), aggressiveness, bullying at school, social isolation, and excessive child obedience (Gresham & Kern, 2004).

The source of the issue is investigated at home, in the classroom, in the child, and society. Unfortunately, it can be challenging to separate the causes since they frequently converge and overlap. Because of this, the child's problematic behavior continues in all contexts and spheres of their life (Kauffman, 2001). These habits lead to poor academic performance and make it difficult for students to interact meaningfully with classmates, parents, and teachers. Consequences include the child's internal conflicts, school dropout, and the intensification of these behaviors (Hinshaw, 1992).

To control behavioral disorders, training that fosters the growth of cognitive and metacognitive skills is crucial (Drigas & Mitsea, 2020). A person's emotional intelligence and cognitive functions are closely associated, claim Chaidi & Drigas (2020). For the child to handle challenging situations at school, there is a great need to develop emotional intelligence beginning with school (Drigas & Papoutsi, 2020). The teacher's role might be crucial in dealing with behavioral problems and the stress they cause. The first and most vital stage is identifying the issue and, as a consequence, using numerous approved teaching methods and approaches that will help the children reduce their behavior issues in the classroom and develop their positive traits (Kassen et al., 1990). The methods used by teachers should be flexible and individualized for each student. Never should a teacher act as a punisher; always act as a supporter (Dane & Schneider, 1998). Through a well-defined educational and pedagogical framework set up by the instructor, ICT tools for diagnostic or didactic purposes can help students enhance their metacognitive skills (Drigas & Karyotaki, 2014).

2. Conceptual definition of problem behavior

Numerous other factors are considered to categorize behavior as common or harmful. Given that every culture has its way of life, distinctive cultural components, and fundamental set of values, the norms and laws of that community play a crucial part. The circumstances in which the conduct happens, as well as the observer's values, perceptions, and attitudes, must also be taken into account because they all increase the subjectivity of the definition. Conduct cannot be deemed harmful if it does not annoy anyone. On the other hand, behavior is regarded as troublesome and has to be carefully assessed when it negatively impacts the kid themselves or the others around

them. Finally, it's essential to consider a behavior's frequency and intensity (Kauffman, 2001).

Many attempts have been made to define the idea of behavior difficulties, even though behavior is a highly complex topic and function that is impacted by numerous endogenous and exogenous elements. Greshman (2004) defined problematic or disturbed behavior as a child's attitude that deviates from what is typical for a given age is linked to patterns of provocation, antisocial behavior, and aggression toward others, and materially hinders the child's growth and development. IDEA's (Individuals with Disabilities Education Act) second definition concentrates on three factors: the challenges these kids confront in school, the persistence of their problem behaviors, and the severity of those behaviors. These may mainly consist of the following:

1. Learning challenges that are not the result of physical, psychological, or sensory issues.
2. An inability to establish and keep positive interpersonal connections with classmates and adults, such as parents or instructors.
3. Disparate feelings and actions under regular circumstances.
4. The prevalence of depression and a negative attitude.
5. Propensity to have bodily symptoms and anxieties associated with personal issues or issues at school (Bierman, 1993)

Although no definition yet encompasses the complete range of behavioral issues, it is widely agreed that behavior must deviate for an extended period from the present cultural and societal standards to be classified as problematic or undesirable (Lynch, 1998).

3. Causes of problem behavior

The consensus is that a child's home, school, and self are the primary sources of behavior issues. It is hard to pinpoint just one causative component since these three variables are linked (Kaufman, 2001). Problem conduct is no longer seen as a self-contained, distinct disorder. Several factors, including the child's general mental state and function, the boundaries and circumstances in which the problematic behavior is displayed, and the significance of the family, school, and larger societal contexts, should all be considered when evaluating and interpreting a behavior problem. These factors continue and build up, and the more unfavorable circumstances a kid experiences, the higher the likelihood that they may experience some behavioral dysfunction (Cicchetti, 1993).

3.1. Endogenous factors

3.1.1. Medical factors

Physical impairments like blindness, quadriplegia, or deafness don't always result in behavioral issues. To satisfy their socio-emotional requirements, a kid with a physical impairment may experience frustration, pressure, prohibitions, rejection, and constraints. This might result in behavioral issues (Kourkoutas, 2011). Additionally, due to the biological illnesses

of the body as well as the limitations and prohibitions the kid experiences to preserve his or her health, biochemical abnormalities like thyroid issues or childhood diabetes can easily result in behavioral difficulties (Kauffman, 2001).

3.1.2. Emotional factors

The emotional components of a child's temperament and certain personality features significantly impact their conduct. For instance, a child's innate traits, such as their calm or enthusiastic reaction to events, their degree of adaptability to social changes, their level of composure or panic under stressful situations, and their propensity to become irritable or anxious, are factors that influence whether or not problem behavior develops (Carr, 2001). Additionally, children develop various defensive strategies, like lying or accusing others, to defend and stand up for themselves. These defense mechanisms have an impact on their behavior and the environment in the classroom. Last but not least, it is essential to consider the child's self-esteem since it influences their conduct and serves as a gauge of their self-worth. Children that have poor self-esteem frequently exhibit behavioral issues. Most of them tend to blame themselves for their difficulties, which only worsens their conduct (Heward, 2000).

3.1.3. Developmental-Cognitive factors

Children's capacity for thinking and reasoning, as well as their conduct, are influenced by developmental and cognitive aspects. For instance, children with cerebral palsy or encephalopathy may not have the mental capabilities necessary to study, which causes learning disabilities with noticeable reading and writing abnormalities. Learning difficulties result from low self-esteem, frustration, and behavioral issues (Sameroff, 2004).

3.2. Exogenous factors

According to the ecosystem hypothesis, many children's behavioral issues are brought on by elements of their environment, such as their family, school, and larger social context. Other social variables, such as the school and community networks a kid belongs to, may prolong or even exacerbate preexisting difficulties (Gresham & Kern, 2004). Family factors are a propensity to problem behavior.

3.2.1. Family

The reason for problematic conduct in children is a toxic home environment with parental disputes, parental mental problems, a lack of alternatives, and inadequate emotional capability mixed with a low family position in society (Hinshaw, 1992). Emotional reactions can be sparked by a child's experiences in their home, particularly their parents' teaching approaches and notably their disciplinary measures, such as excessive compassion or extreme austerity. For instance, lack of parental direction and monitoring, unduly harsh or improper punishments, and highly tight disciplinary practices are all significant risk factors for the emergence of problem behaviors (Kourkoutas, 2011). The child's relationships with their family members are also crucial; behavioral issues are seen when children experience poor parental emotional involvement and a lack of parental tenderness and warmth instead of caring, attention, understanding, and support. According to Merrell (2002), the most important characteristics include a lack of regular emotional approval, critical parenting, and mother rejection.

The family's context, makeup, and environment affect and shape its climate, affecting and shaping how the kids grow emotionally and psychologically. For instance, children who have experienced physical abuse or have seen family members abuse exhibit serious behavioral issues. Children who grow up in an environment of turbulence, conflict, and instability at home can display unusual tendencies. Poverty is frequently blamed for children's behavioral issues, leading to inadequate housing, inadequate nourishment, and the absence of parents due to employment. The lessons a kid learns inside a family are especially crucial since their parents' actions greatly influence their beliefs, rules, and way of life (Kauffman, 2001). Children mimic parental behavior patterns in their relationships with peers, internalize these patterns, or both, and as a result, experience severe emotional distress and personality disruption (Kourkoutas, 2011).

3.2.2. The school environment

School is another crucial element that significantly affects a child's conduct. Students spend a lot of time at school participating in the learning activities of the school community, which is a multifaceted environment (social, cultural, physical, and technological). Numerous studies have shown that each school's structure, strategies, and routines significantly impact how kids behave (Kassen et al., 1990). More precisely, behavioral issues are more common when the educational system is authoritarian, the consequences and punishments are rigorous, the teaching strategies solely encourage individual effort and responsibility, and the instructor has unchallenged power. Schools with democratic, child-centered methods and a kind, constructive mode of cooperation, on the other hand, will have fewer behavioral issues (Kourkoutas, 2011).

Additionally, a sizable body of research-based evidence supports the idea that when a student's expectations, interests, and emotional needs are not met in the classroom, the student-school relationship is strained, and the student ultimately adopts a repulsive attitude that leads to behavioral issues. Additionally, because curricula are typically created to meet the needs of an average student and the values and standards of the middle class, many children may become bored if the program is significantly below their abilities or, conversely, demotivated, frustrated, and inadequate if the program is substantially above their abilities. Both of these situations have the potential for the emergence of behavioral issues (McClelland et al., 2000).

Merrell (2002) asserts that a purposeful organizational structure encourages the growth of a suitable socioemotional milieu in the classroom, which lessens behavioral issues. Additionally, the teacher's actions, tone of voice, attitude, volume of speech, and instructional methods might encourage behavioral issues (Poulou & Norwich, 2001). It has been not-

ed that teachers frequently adjust their demeanor and tolerance based on the student's achievement. For instance, they could ignore discipline issues and be sympathetic to "good" students while giving moral lectures to kids who do poorly (Greenhalgh, 2001).

Finally, the classroom arrangement is equally crucial since crammed classes affect the pupils' psychopathology and general personality development. According to Merrell (2002), a prolonged confined environment might lead to overstimulation and behavioral issues.

3.2.3. The social environment

The social environment is one of the most essential elements that affect behavioral issues. For instance, a child's environment and quality of life—such as poor socioeconomic position and disparities in culture, lifestyle, religion, or ethnicity—might not be conducive to the growth of positive interpersonal interactions (Kauffman, 2001). Additionally, the media, an essential part of civilizations, and how it functions may have a detrimental impact on how youngsters behave and their personalities develop. Children learn to act, conduct, and communicate by watching and copying positive role models. Television is one such example. The path to communication and behavioral issues is paved when the media misinforms and immobilizes children, manipulating them towards consumerism, when violence on television is much more prevalent than in real life, and when children do not use their free time creatively but instead devote large portion of it to binge-watching television. As a result, violent events aired in the news, on television, online, and in virtual reality games, together with the commercialization of leisure and amusement, transform into a way of life (Sanders et al., 2000).

4. Consequences on the learning process and the students' interpersonal relations

Despite their desire for acceptance, children with behavioral difficulties often struggle to build stable and fulfilling relationships with their peers and relationships of mutual trust and collaboration (Bierman, 1993). It has been noted that children with a propensity for destructive actions suffer significantly with their emotional growth, ability to demonstrate empathy, and other social skills essential for forging deep interpersonal connections. These children typically exhibit high egocentrism, immature thinking, severe mental conflicts, and an inability to restrain impulsive behavior. Additionally, they have difficulty managing the strength of their negative feelings toward other people, such as anger and impatience. As a result, they tend to act violently and antisocially as a way to let off steam (Kauffman, 2001). Additionally, they frequently harbor hostile preconceptions; they accuse others of having harmful intents and may mistake neutrality for an act of provocation (Kourkoutas, 2011).

Children that exhibit violent tendencies and behavioral issues are more likely to be rejected by their classmates and, as a result, either become socially isolated or form partnerships with peers who also struggle with these issues (Kauffman, 2001). They could even grow a good self-perception that hides their poor self-esteem and serves as a buffer against peer rejection. It is said in several literary sources that these kids struggle to build internal functional patterns that serve as the cornerstones of positive conduct, emotional connection, and fulfillment. When unpleasant and traumatic events are internalized at crucial developmental stages, internal designs are created, leading to aggressiveness and behavioral issues (McClelland et al., 2000). Additionally, because they fail to manage and regulate their emotions, they cannot come up with original solutions to their interpersonal and intrapersonal issues, which causes them to act provocatively and destructively against others (Kauffman, 2001).

Children with behavioral issues frequently have learning impairments, low academic performance, high failure rates, and drop out of school. It is challenging to distinguish which occurs first since problem conduct and academic failure interact and reinforce one another (Kassen et al., 1990). It is sometimes suggested that academic failure encourages a child's disengagement from learning and, as a result, intensifies undesirable conduct. Additionally, children with behavioral issues are far more likely to face direct or indirect teacher rejection than peer rejection. Teachers seldom encourage students who exhibit antisocial conduct to attempt to behave positively, and they penalize them for their lousy behavior far more frequently than their peers (Hinshaw, 1992).

5. Strategic Interventions

It is well established that kids with behavioral issues have substantial cognitive, emotional, social, and familial variability. Therefore, to integrate them into the classroom, each of them requires a particular approach and intervention (Merrell, 2002). Teachers should speak quickly and clearly to prevent behavioral issues and establish successful rules since kids are more likely to follow "commands" that are brief and simple to comprehend. Additionally, regulations should be communicated in a kind and encouraging manner to give the idea to the student that the instructor is not trying to penalize them but rather is trying to help them change and do better. If the instructor administers punishment, this may lessen the likelihood of issues arising—but only if the rules he sets out are clear, understood, and applicable and contain no additional justifications or justifications that would undercut his authority. The instructor should offer their pupils enough time to consider and adhere to the rules and any potential consequences (Greenhalgh, 2001).

The instructor can use positive or negative reinforcers to strengthen or weaken particular behaviors. For instance, the instructor could cease correcting the kid after apologizing for their poor behavior, or the student might receive a sticker for making progress in his behavior (Poulou & Norwich, 2001). The physical-social atmosphere in the classroom might also be altered to lessen issues. For instance, changing the classroom arrangement to reduce the number of stimuli that ADHD youngsters

are exposed to is helpful. To minimize distractions, the instructor could, for example, move the student's seat so that he or she is near the podium. The paper basket might also be placed close to the student so that he or she can get it without getting up and being distracted by other things (Kourkoutas, 2004).

Additionally, when sure students engage in a quarrel they cannot resolve on their own, trained peers may step in to help. These skilled peers may provide recommendations to individuals involved in the disagreement, working with the teacher. A consistent decline in behavioral issues was seen everywhere this conflict management strategy was used. Classroom conversations may be used to teach problem-solving, but not in a structured manner; instead, they can be included in current courses as part of an interdisciplinary curriculum or as a result of real-world circumstances (Greenhalgh, 2001).

Additionally, employing excellent teaching strategies (collaborative method) where students participate in role plays that the instructor defines to generate an "academic debate" may also result in successful problem-solving. Educational subjects may use this constructive dialogue to encourage learning and dispute resolution. To cope with the abovementioned concerns, the teacher generally addresses (or should manage) the problems in this manner. The teacher may act more deliberately and systematically to lessen and finally control the challenges (Kassen et al., 1990).

6. The role of ICTs

According to Kontostavlou & Drigas (2019), using ICTs in special education is beneficial. Teachers may use ICT techniques to intervene, which is advantageous for students since it enables them to develop their abilities and talents even further. For instance, Prins et al. (2013) developed "Braingame Brian" to aid children with ADHD in developing their executive function. The 40- to 50-minute game "Braingame Brian," named after the protagonist Brian, features seven different settings: the area around Brian's parent's home, the hamlet, the abandoned island, the backlands, the beach, the swamp, and the basement workshop. In these universes, every character faces a challenge. Brian helps people solve these problems by engaging in cognitive exercises.

An external support structure is put in place to improve the youngster's motivation to complete the program. The information from each training session is uploaded to a central database. Based on this data, educators get online student development feedback. Forty children (8–12 years old) with ADHD participated in the study. They were divided into two groups: the experimental group (n = 18), which received treatment using "Braingame Brian," and the control group (n = 22), which received no treatment at all. Parents and instructors were given questionnaires to complete before and after the intervention to assess executive function impairments, ADHD symptoms, and disruptive behavior problems. The results demonstrated significant improvements in children's executive function (Gioia et al., 2000) and signs of ADHD (Inattention and Hyperactive-Impulsivity subscale of the Disruptive Behavior Problem Scale;

Pelham et al., 1992). Many encouraging findings from this pilot study point to the program's effectiveness. To gain therapeutic advantages, "Braingame Brian" should be used with other ADHD therapies, including medication and behavioral therapy, rather than as a stand-alone treatment (Prins et al., 2013).

Children can improve their academic skills by using mobile applications as an additional teaching tool in school settings (Drigas & Kokkalia, 2016; Doulou & Drigas, 2022a). Spachos, Chiazzasse, Merlo, Doherty, Chifari, and Bamidis (2014) looked at the most popular tablet and mobile applications used to treat ADHD in kids. They also assessed the operation of the WHAAM mobile app. Mobile health (m-health) has emerged as a critical subset of e-health due to the hardware capabilities of smartphones that enable e-health functionality in mobile apps (Liu et al., 2011). While some programs help manage and track ADHD symptoms or even enable diagnosis, others act as instructional and educational tools. The WHAAM program allows SMART behavior monitoring by establishing a network of people who are active in child care and gathering data. The health professionals engaged then show and evaluate the data acquired, enabling the planning and scheduling of interventions. Additionally, the WHAAM application can assess the intervention's effectiveness (Alves et al., 2014).

There are now many applications available; one such app is the ADHD Treatment Researcher (Vermont Behavioral Solutions, 2011), an Android app that gives users access to the most recent clinical trials, books, videos, forums, events, and research on ADHD. Available for iPhone, iPad, iPod touch, and Android smartphones, the "You Can Handle Them All" app (The Master Teacher®, 2011) is designed to help parents or educators deal with behavioral issues. To gather and compile behavioral data, psychologists might use the iBAA Behavior Assessment App (Future Help Designs, 2012). It includes several observation methodologies, including frequency and intervals of ADHD symptoms, and is available through an iPhone or iPod touch. Other software developed by Apple includes "Behavior Assessment Pro" (Marz Consulting, 2011), which offers behavioral analysis via guided questions and enables users to schedule follow-up tasks with reminders.

According to Kokkalia et al. (2017) and Doulou & Drigas (2022b), serious games are cutting-edge teaching tools that may benefit and assist children with various challenges while fostering learning and enjoyment in educational settings. For instance, Bland'on Diego et al. (2016) used the virtual reality 3D video game Harvest Challenge to evaluate and train attention and self-regulation in children with ADHD. An electrode was positioned on the frontal brain, and a Brain-Computer Interface device (MindWaveBCI) was utilized to map attention levels from 0 to 100 percent. EEG signals were also recorded while the individual was at rest. Neurofeedback and interactive games are therapeutically suitable due to their unique motivation and effectiveness in reducing the symptoms of the condition (Drigas & Bravou, 2012).

Two intervention sessions were held at a nearby specialized facility (Instituto de Audiolog'a Integrated-IdeAI) with nine youngsters who had been diagnosed with ADHD. The 30-minute sessions were divided into two halves, with the

second lasting 25 minutes and the first lasting 5 minutes. The child was initially monitored using the MindWave gadget, which recorded their EEG readings while listening to calming music using the open-source OpenViBE software. The second phase developed three distinct interactional phases:

1. Equipment: Adventure sports on an environmentally friendly farm open the game. The player's initial goal is to acquire the equipment needed for a secure journey, which calls for a considerable increase in focus (more than 50%) and adherence to the regulations. Players must effectively choose a helmet, a set of gloves, a rope, and boots using the visual signals on the screen.
2. Path repair: The player must go to a mountain's peak to obtain the rope. As a result, a series of wooden steps were put in place along a long walk where several tragedies occurred. Players will therefore need to focus more on repairing the track.
3. Carrot Harvest: During this stage, players engage with virtual objects. The user is given a basket and placed in a big field where carrots are harvested. The user must pick as many carrots as possible while standing and keeping an attentive level high until the vegetables are collected. The carrots vanish underground and are no longer collectible when players lose attention. The video game ends when the period expires (30 minutes) (Bland'on Diego et al., 2016).

The findings showed that playing the video game Harvest Challenge helped the kids perform better, which showed a more vital ability to maintain constant attention and self-regulation (Bland'on Diego et al. 2016). The results also showed higher alpha and beta wave activity, frequently associated with hyperactivity (Lansbergen et al., 2011).

7. Conclusions

As a concluding point, it is crucial to emphasize digital technologies' beneficial and essential contributions to education. Technologies that facilitate and enhance educational processes, such as evaluation, intervention, and learning, include mobile devices (Kokkaklia, 2017), a variety of ICT apps (Drigas & Ioannidou, 2011; Drigas et al. 2004; Drigas et al. 2004a; Drigas et al. 2011; Charami & Drigas, 2014; Drigas & Kouremenos, 2005; Drigas et al. 2016; Drigas & Kokkalia, 2017; Drigas & Koukianakis 2004; Drigas & Leliopoulos, 2013; Pappas et al. 2018; Papanastasiou et al. 2018; Drigas & Kontopoulou, 2016; Papanastasiou et al. 2020; Drigas et al., 2005; Pappas et al. 2018; Pappas et al. 2019), AI & STEM ROBOTICS (Drigas & Ioannidou, 2013; Drigas & Vrettakos, 2004; Drigas & Vrettakos, 2005; Drigas et al. 2009), and games (Chaidi & Drigas, 2022). In addition, using ICTs in combination with theories and models of metacognition, mindfulness, meditation, and the growth of emotional intelligence (Drigas & Mitsea, 2020; Drigas & Papoutsi, 2019; Drigas & Pappas, 2017; Drigas & Karyotaki, 2017; Drigas & Mitsea, 2021; Drigas & Papoutsi, 2020; Kokkalia et al.

2019; Pappas & Drigas, 2019; Papoutsi & Drigas, 2017; Papoutsi & Drigas, 2016; Karyotaki & Drigas, 2015; Papoutsi et al. 2019) speeds up and improves educational practices and outcomes, particularly for behavior issues in classrooms.

This study aimed to evaluate the literature studies on behavioral issues that arise in classrooms and the function of ICTs in managing and controlling them. According to the literature review, individualized interventions for children with behavioral problems in the classroom can be successful if they focus on fostering positive behavior as well as interpersonal and emotional skills and when combined with the use of new technologies (Drigas & Kokkalia, 2016). ICT usage is becoming increasingly vital as new social conditions arise (Pappas et al., 2017). As they may be used at home and school to enhance the quality of the education offered, digital intervention tools could be beneficial (Drigas & Ioannidou, 2013). Student's cognitive and metacognitive capacities are improved through learning strategies based on interactive settings that include active and creative problem-solving (Drigas & Karyotaki, 2016). The scientific community has shown significant concern with discussing behavioral issues in the classroom and their proper rehabilitation techniques. More study is needed to understand children's behavioral problems better and create new therapy strategies to enhance cognitive and metacognitive abilities so they can effectively integrate into society.

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