Using ChatGPT for Story Creation: One Autistic Teen's Autonomous Reading Motivation

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Abstract

ChatGPT has experienced exponential growth in its number of users since its launch in November 2022. Researchers studying early adopters of the generative artificial intelligence (AI) chatbot have found positive reactions from those who have used ChatGPT for reading and writing. However, this research is still in its infancy and few studies exist on the impact of AI Large Language Models (LLMs) on reading motivation. No studies have been published on autistic teens' reading motivation and behavior when using AI LLMs for story generation. Framed by Self-Determination Theory and Cognitive Evaluation Theory, this case study explores one autistic teen's use of ChatGPT and his resulting autonomous motivation for leisure reading. Findings reveal that AI-generated stories increased the teen's intrinsic reading motivation, addressed his personal interest in fictional characters, and strengthened his literacy practices. Caregivers and educators may consider permitting the use of AI LLMs for story creation by autistic teens to develop their reading motivation and behavior.

Keywords: ChatGPT, AI, Large Language Models, autism, self-determination theory, reading motivation

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Introduction

In early 2023, Michael, an autistic teen, sat in his living room staring at his smart phone. He began to laugh. His mother asked him what he was laughing at, and he said he was reading a story ChatGPT had written for him. Michael's mother watched as her son read silently. And read and read. Not only had she not seen her son read for such an extended amount of time, she had not had any hands-on experience with ChatGPT. She asked him to show her how it generated a story. Michael showed his mother the 23-word prompt he had typed into ChatGPT and the output of the story. They scrolled through the pages of the narrative. Michael seemed pleased to have a story designed for his personal interest and his mother was thrilled to see him reading for an extended period of time.

Researchers have studied reading motivation in young people for decades (Baker et al., 1996; De Naeghel et al., 2012; Guthrie, 1996; Troyer et al., 2019; Wigfield, 1997). The emphasis on intrinsic and extrinsic motivation in the research builds on general motivation theories of Deci and Ryan (1985) and Ryan and Deci (2000) and points to the impact intrinsic motivation has on reading engagement and proficiency. Dimensions of intrinsic reading motivation include situational interest (Wigfield, 1997) and activity-specific motivation (Schiefele et al., 2012), which are worth considering when investigating the impact ChatGPT has on leisure reading.

ChatGPT is an artificial intelligence (AI) Large Language Model (LLM) that is available on smartphones in the United States and can generate text for various purposes. ChatGPT generates text when a prompt is typed or spoken into its user interface. The multimodal interface makes ChatGPT usage accessible to many individuals with disabilities. OpenAI introduced ChatGPT on November 30, 2022 (OpenAI, 2022) and defines its text models as "advanced language processing tools that can generate…text with high levels of coherence and accuracy" (OpenAI, n.d.). ChatGPT gained instant popularity, acquiring 1 million users within five days of its launch, 100 million users within two months, and as of July 2024 has over 180 million users (Duarte, 2024; Jayaputri, 2024; Skjuvi et al., 2024). Over 14% of ChatGPT's users are in the U.S., while India, Brazil, and Indonesia each make up between 4% and 10% of the users worldwide (Duarte, 2024).

Early adopters of ChatGPT reported that entertainment and creative story generation were among their top uses for the AI tool (Skjuve et al., 2024). Autistic adults in South Korea use ChatGPT to discuss issues they do not want to discuss with family members or others around them and to write poetry and generate ideas for novels (Choi et al., 2024). Autistic adults in the United States report using ChatGPT as a chat partner, with one reporter writing that the AI

platform can be therapeutic and can be used to empower people and help them be fully autonomous and experience success on their own terms (Hoover & Spengler, 2023).

One form of autonomous learning is autodidacticism. Autodidacticism is "the process or practice of learning a subject without a teacher or formal education" (dictionary.com). Berger (2022) states that autodidacticism is "motivated by self-determination and enthusiasm for learning independently" (p. 2) and Firat (2023) writes that "autodidactic learning allows learners to take control of their own learning and development, and to learn at their own pace in a way that is tailored to their individual needs and goals" (p. 1).

Firat (2023) wrote about the potential of using ChatGPT to enhance autodidactic experiences in open education settings. He asserted that "ChatGPT may not only encourage learners' autonomy but also improve learning experiences" (p. 2). He then articulated six ways that ChatGPT could enhance autodidacticism:

1. Personalized support and/or suggestions for learning materials based on a learner's individual needs and objectives
2. Real-time feedback and guidance
3. Increased accessibility
4. Convenient and flexible learning
5. Enhancing the use of open educational resources
6. Self-assessment and reflection

While a wide range of individuals may have autodidactic tendencies, this ability may be enhanced through the use of AI Large Language Models. For those prone to social anxiety, such as autistic individuals, those with attention deficit/hyperactivity disorder, and those who are demand-avoidant, taking control of one's own learning may be especially beneficial. There is a lack of research on autistic individuals and those with ADHD using ChatGPT in autodidactic ways.

Autism, classified as a developmental disability, is a diagnostic label for naturally occurring variations in brain development evidenced in divergent sensory processing. Evolving understanding of autism moves beyond the deficit-perspective of the Diagnostic Statistical Manual's (American Psychiatric Association, 2013) criteria of repetitive habits and impaired social communication to include physical and mental co-morbidities and the inclination to appear neurotypical by "masking" typical autistic tendencies. Autism is currently identified in

approximately 1% of the world's population and occurs across ethnicities and nationalities (World Health Organization, 2023). Many individuals with the diagnosis see it as an indelible part of their identity and prefer the term "autistic" as opposed to being referred to as a "person with autism."

Autism and Attention Deficit/Hyperactivity Disorder (ADHD) co-occur in 50-70% of the autistic population (Hours et al., 2022). ADHD is an umbrella term for symptoms of inattention (not being able to keep focus) and/or hyperactivity (excessive movement that is not fitting to the setting) and impulsivity (hasty acts that occur in the moment without thought) that interfere with functioning or development (American Psychiatric Association, 2024; National Institute of Mental Health, n.d.). Individuals with ADHD may "struggle with relationships and antisocial behaviors" and ADHD may negatively impact "academic and professional achievements" (American Psychiatric Association, 2024; National institute of Mental Health, n.d.). Between 2.5% and 8.4% of the population have been diagnosed with ADHD with the top of the range being children (American Psychiatric Association, 2024). While the presentation and support needs of autistic individuals and those with ADHD vary from person to person, a percentage also fit a demand avoidant profile.

Demand Avoidance refers to a profile in which an individual, often autistic, needs "to be in control and avoid other people's demands and expectations" (Fidler & Christie, 2019, p. 11). This need for autonomy and control is anxiety-driven. An individual with a demand-avoidant profile may feel anxiety from demands of time, questions, praise, transitions, and from being expected to make decisions (PDA Society, 2021). AI LLMs may provide a low-anxiety option for developing intrinsic motivation in literacy practices for those with demand-avoidant profiles.

Theoretical Framework

Self-Determination Theory (SDT), intrinsic motivation, and Cognitive Evaluation Theory (CET) are interrelated. SDT focuses on "what kind of motivation is being exhibited at any given time" (Ryan & Deci, 2000, p. 69) with intrinsic and extrinsic motivation being the primary categories of motivation. Intrinsic motivation has to do with "the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" (p. 70). CET focuses on environmental conditions that support intrinsic motivation and posits that "freedom from demeaning evaluations…facilitate[s] intrinsic motivation" (p. 70) and "according to CET, people must not only experience competence or efficacy, they must also experience their behavior as self-determined for intrinsic motivation to be in evidence" (p. 70). While CET research emphasizes the positive impact of support and security from adults in the environment,

"many intrinsically motivated behaviors are happily performed in isolation, suggesting that proximal relational supports may not be necessary for intrinsic motivation" (p. 71) and this is especially true for autistic individuals with demand-avoidant profiles whose anxiety is triggered by the presence of perceived authority figures.

Literature Review

AI LLMs and Literacy Practices

Published studies on young people's use of AI LLMs are still in development, with few articles available in 2024 at the time of this writing. I searched for related articles using a university library's access to multiple databases including GoogleScholar and EBSCOHost in June 2024. I found 16 articles that included the topic of AI LLM use for literacy practices. Five studies are reviewed below. All the published research on students' use of AI LLMs is of studies that took place in Asian countries. I was not able to find any published studies on the use of ChatGPT for student literacy practices from the U.S. at the time of this writing.

Jayaputri (2024) used a pretest-posttest experimental design to study the impact of ChatGPT on student motivation in English language development. Jayaputri surveyed 40 academy students in Papua, Indonesia in November and December 2023. The survey assessed intrinsic motivation, perceived ease of use of ChatGPT, perceived usefulness of ChatGPT, and the participants' behavioral intentions for using ChatGPT in the future. Before and after receiving lessons on using ChatGPT, the students completed surveys to evaluate changes in motivation in learning English. The researcher found that students were more motivated to use ChatGPT as a specific learning methodology after the intervention and that several factors fostered the learner motivation. Factors mentioned in the study include personalized and instantaneous interactions with AI chatbots, heightened sense of engagement and interactivity, augmenting the educational journey for students, and the prompt and pertinent responses provided by ChatGPT.

Lee et al. (2023) also used a pretest-posttest survey with students in English-as-a-foreign-language classes in elementary schools in South Korea. Sixty students were provided with three 40-minute intervention lessons using an AI-based content generator (AICG) that created English texts for them to read, while 61 students served as the control group and did not engage with AICG. The researchers surveyed the students with a focus on foreign language enjoyment and learners' interests in reading English books. The intervention group showed significantly greater foreign language enjoyment and interest in reading English books in the posttest than the control

group. The researchers articulated that AICG allows students to generate original passages on themes they find to be interesting.

Li et al. (2023) surveyed and interviewed middle school and high school students at a summer camp in Beijing, China on their behavior and motives for using AI LLMs. They had 76 participants complete surveys – 34 middle school students, 42 high school students, and 19 parents. The survey covered five domains of AI LLM usage: information, practicality, sociality, technical characteristics, and adoption attitude. Fourteen of those surveyed were also interviewed to investigate the behavior, motivation, and attitude of students and parents toward using AI LLMs for learning. Researchers found that AI LLMs stimulate student interest in learning and that parents had a more positive outlook on using AI LLMs for school education than the students did. However, the parents expressed concern over a potential decline in students' independent learning abilities when using AI LLMs in middle school.

Salas-Pilco et al. (2022) conducted a systematic review of literature published between 2017 and 2021 that focused on ethnic, cultural, and linguistic minority students' use of AI in inclusive educational settings. They analyzed 27 studies from nine countries and concluded that AI could help personalize learning based on students' needs. Nine studies demonstrated that AI improved student academic performance, and five studies showed that AI promoted student engagement. The researchers concluded that AI can help support the inclusion of minority students in educational settings.

Toyokawa et al. (2023) conducted a case study in which they studied two students who attended a special education classroom to explore how AI can be used to support learners in inclusive education. This study took place in Japan, where placement in a separate special education classroom is considered inclusive education, a designation different than inclusive education in the U.S. Toyokawa et al. (2023) concluded that AI can be personalized to individual learners' needs and pace and that attention should be given to AI that offers "precise, individualized guidance and feedback for more effective interventions" (p. 11). Moreover, they stated that "it would be possible to use natural language generation to support reading-learning by navigating the contents and the flow of reading activities in an easy-to-understand manner using both text and audio" (p. 12).

Although few, the published studies on students' use of AI LLMs for literacy practices provide descriptions of populations and purposes worth studying in research on autistic students' use of AI LLMs for leisure reading. Lee et al.'s (2023) study establishes that students use AICG for personal reading pleasure, while Salas-Pico et al.'s (2022) and Jayaputri's (2024) studies

provide similar findings about AI positively influencing student engagement. More specifically, Toyokawa et al.'s (2023) research demonstrates the potential of studying AI use by students with disabilities, and Li et al. (2023) includes the vital element of parents' perspectives on the use of AI LLMs among young people. Each of these publications presents findings that demonstrate the need for more research, such as this current case study of an autistic teen who uses ChatGPT to generate stories for leisure reading.

Reading Motivation

Articles on motivation in general and specifically reading motivation abound as the subject has been theorized and studied for more than 50 years. In my review of literature, I focused on intrinsic motivation and found 11 articles specifically related to intrinsic motivation and reading. The following studies are representative of related literature from the past three decades.

De Naeghel et al. (2012) developed and used the SRQ-Reading Motivation questionnaire to assess recreational and academic reading. They surveyed 1,260 Flemish fifth graders and 67 of their teachers. They found that autonomous (intrinsic) motivation plays a significant role in recreational reading motivation, behavior, and performance. They concluded that "students spend more of their leisure time on reading, are more deeply and attentively engaged in reading, and perform better on a standardized reading comprehension test, when they read for their own enjoyment or believe it is personally relevant" (p. 1017).

Schiefele et al. (2012) published a review of 20 years of research on reading motivation. They concluded that intrinsic reading motivation makes a positive contribution to reading behavior and reading competence. They further affirm forms of intrinsic reading motivation such as object-specific reading motivation, in which "the person is motivated to read because of an interest in the topic of the text" and activity-specific reading motivation, in which "the person is motivated to read because the activity of reading provides positive experiences" (p. 429). They also considered categories of reading motivation, and their review of literature found interest, enjoyment, and relief from boredom to be among those identified.

Troyer et al. (2019) enrolled 4,529 rising fourth- and fifth-grade students from 59 elementary schools in North Carolina for a 2014 study on intrinsic motivation. The researchers had students answer questions about reading involvement, curiosity, self-efficacy, and autonomous recreational reading motivation. They found that intrinsic motivation has a greater effect than reading amount on achievement. They also concluded that the quality of reading material, meaning the text matches the reader's interest and skill level, matters for less-skilled readers.

Wigfield (1997), in a seminal article on reading motivation, described the development of the Motivation for Reading Questionnaire (MRQ) and subsequent studies' findings that students' reading motivation is multidimensional. One key dimension is that of situational interest, when the reader's "interest is sparked by a particular text or other features of a particular reading act" (p. 63). Wigfield connects reading motivation to other aspects of reading and concludes that when compared to extrinsic motivation, intrinsic motivation is the stronger predictor of the amount and breadth of reading students do.

Methodology

Given the rapid growth in the use of AI, the multiplying population of autistic teens, and the growing awareness of autodidacticism, I conducted qualitative research using a single case study method. "Qualitative research gathers participants' experiences, perceptions, and behavior. It answers the hows and whys instead of how many or how much" (Tenny et al., 2022, p. 1). A "case" may be an individual, as it is in this study, and the purpose of a case study is to "explore a phenomenon about which not much is known" (Ashley, 2012, p. 102). Creswell and Poth (2018) note that a case, regardless of size, must be bounded in time and setting and that the study is composed "to illustrate a unique case, a case that has unusual interest in and of itself" (p. 98). This case study came from two audio-recorded interviews and follow-up questions sent by text.

The participant in this study is a 16-year-old autistic male with ADHD who fits the demand-avoidant profile. He attends school in an intensive therapeutic setting, and his core academics are taught in a one-on-one format. At home, he is resistant to any work or activities that remind him of school. He does not choose to read books or other print material. His use of ChatGPT occurs in the home, outside of school hours. He uses ChatGPT independently, with his mother's permission, and decided to create stories using the LLM tool without adult prompting. This study covers the participant's use of ChatGPT from March 2023 to June 2024. During this time, no curricular, pedagogical, or home environmental factors changed. Assent from the participant and parent consent were provided for this case study.

Two interviews, with semi-structured questions and follow-up text correspondence with clarification questions took place in June and July 2024. The participant also provided a copy of his original ChatGPT prompt and the story the AI chatbot generated. To analyze the data, I listened to the audio-recorded interviews several times and transcribed the questions and responses. I also transferred the text responses to the secured document with the transcribed interviews. I then sorted the transcript excerpts, placing similar responses together and identifying themes.

Findings

I identified four themes in Michael's responses related to the use of ChatGPT for leisure reading. The following section contains excerpts from the interviews organized by the themes of interest, enjoyment and engagement, behavior, and participant concerns.

Interest

Michael created his first story using ChatGPT in March 2023. He would be considered an early adopter of ChatGPT as the AI LLM had been publicly available for less than six months when he began creating stories to read. His first prompt was 23 words long and included character names from the long-running and popular cartoon *SpongeBob*. Michael's favorite cartoon is *SpongeBob,* so he built his reading around his personal interests.

Michael's reading interests are currently dominated by one genre. During the interview, Michael identified himself as a lover of fiction, and his primary access to fiction is through ChatGPT rather than through hardcopy books: "I'm a big fiction guy. I haven't read any copies of any books as of recently, particularly in the fiction variety."

Enjoyment and Engagement

I asked Michael about his motivation for using ChatGPT for story generation. He said the following:

> "I think it's mostly fun for experimentation."
>
> "It's good for experimentation and it helps when you are bored."
>
> Researcher: "How does it make you feel to use ChatGPT when you are bored?"
>
> Participant: "Mildly entertained."

Michael discovered the ability of ChatGPT to address one of his personal needs – the need to resolve his boredom. He was able to find a free, personalized, non-disruptive way to entertain himself at home. He said that he enjoys that the plots ChatGPT creates are *ambitious* and *over the top*.

When asked how many stories he has had ChatGPT generate for him since March 2023, Michael opened his notes app on his phone and began counting. He counted under his breath for more than a minute and stated: "Approximately 75 or 76 story prompts I made with ChatGPT."

In the 15 months since he started using ChatGPT, Michael has autonomously created more than six dozen stories for his leisure reading. He has transitioned from reading no narratives at home to creating and reading more than a story a week.

Reading Behavior

Although Michael sees his mother reading frequently at home, he associates his reading behavior with the practice of oral reading expected in his therapeutic school setting. At one point in the interview, he clarified his style of reading when using ChatGPT: "I do read in my head, just not out loud."

By engaging with ChatGPT without parents or teachers around, he was able to expand his repertoire of reading practices. Michael's use of ChatGPT changed not only his modality of reading but also changed the amount of reading he does and where he does it.

Researcher: "Do you read more on ChatGPT or more at school?"

Participant: "If I were to be brutally honest, these days I read on ChatGPT. I don't have to worry about getting a physical book."

Michael's changed reading behavior also reinforces the literacy skills he has learned at school. Each time Michael asked ChatGPT to generate a story, he used a prompt similar to a Mad-Libs template. In the paper-and-pencil word game Mad-Libs, players write story templates with key words missing, as other players are asked to provide parts of speech without knowing the sentences in which the parts of speech are going to be placed. During one interview, Michael explained how he provides information to ChatGPT: "Here's the prompt I would normally give: Write me a blank (adjective) story where this character, this character, this character, that character, that character, etc., (verb, verb that), and other details adjacent to the plot."

Michael named the parts of speech in his explanation, indicating that while his topical interest may change from story to story, he provides parameters for ChatGPT's stories. He continued to demonstrate his understanding of language features when he described ChatGPT's work: "These stories do tend to fill in some generic tropes and cliches into the stories it creates for me."

Participant Concerns

Michael's understanding of ChatGPT showed evidence of ethical considerations. He mentioned risks associated with the proliferation of AI chatbots that extended beyond his own use and captured some universal cautions: "People are becoming more and more concerned

about AI being used to generate stories and pictures because it is going to replace writers and artists. That and AI is kind of a lazy way to do something."

Michael included in his responses to questions about good uses of ChatGPT warnings about the potential misuse of AI. He also expressed concerns about AI LLM hallucinations and how ChatGPT may deliver content that is not true.

Discussion

This case study gathered data on Michael's experiences, perceptions, and behavior with ChatGPT. The phenomenon of autistic teens using AI to generate stories for leisure reading has not been widely studied and is not well understood. Michael's responses to interview questions were sorted into four themes, which provided insights into both the use of ChatGPT and intrinsic reading motivation.

First, Michael revealed that his situational interests (Wigfield, 1997) guide his use of AI LLMs for story reading. He provides prompts that include some of his favorite fictional characters. This is an example of object-specific reading motivation, as described by Schiefele et al. (2012) in their synthesis of research. Object-specific reading motivation is a form of intrinsic motivation that has been shown to have a strong effect on reading achievement and performance (De Naeghel et al., 2012). Li et al.'s (2023) study on students using AI LLMs at a summer camp in China revealed that ChatGPT is a good tool for stimulating student interest in learning. It is likely that there is a reciprocal relationship between Michael's intrinsic motivation to read stories about fictional characters and his use of ChatGPT to create new stories. Each reinforces the other – as Michael uses ChatGPT to create fictional stories, his motivation to read increases, and as his object-specific motivation increases, he creates more stories on ChatGPT. This supports Lee et al.'s (2023) finding that AICG, like ChatGPT, allows students to create stories they find interesting. For Michael, this is a form of autodidacticism.

Second, Michael identified one of the key categories of reading motivation – relief from boredom – as one of the main reasons he uses ChatGPT to make stories. He has found ChatGPT to be entertaining and fun, a good form of help when he's bored. Schiefele et al's (2012) summary of Greaney and Neuman's (1990) analysis of students' reading motivation identifies "escape" as a factor of reading motivation. They stated, "Students scoring high on this factor read to avoid boredom and when they have nothing better or more exciting to do. For these students, reading functions as a source of distraction and relaxation" (p. 435). Michael has found ChatGPT's story generation to be so enjoyable and engaging that he has created 76 stories in a little over a year. Salas-Pilco et al.'s (2022) literature review found five studies that concluded

that AI promotes student engagement. De Naeghel et al. (2012) also found that engagement and time spent reading stem from enjoyment. To relieve his boredom, Michael used his activity-specific motivation to increase reading activity because it provided positive experiences (Schiefele et al., 2012).

Third, Michael's reading behavior with ChatGPT stories reinforces his school-based literacy learning and provides him with the opportunity to practice literacy in new and autonomous ways. This allows him to practice his autodidacticism. With his ChatGPT stories, he is free to read silently. He has become proficient at autonomous recreational reading and is motivated to continue. Troyer et al. (2019) found this to play a significant role in reading achievement. Schiefele et al. (2012) concluded that intrinsic reading motivation positively impacts reading behavior.

Finally, I found Michael's inclusion of concerns about ChatGPT to show adeptness. Although he uses ChatGPT independently, with his mother's permission, he is aware that there are reasons to be cautious about an overreliance on the AI chatbot. Most of the published literature on the use of ChatGPT also warns of the misuse and misrepresentation of AI-created material. Michael's autodidacticism extends beyond reading; it includes wanting to learn about and act in an ethical manner when using ChatGPT.

The use of an AI LLM for story creation afforded an autistic teen the opportunity to control enough content in AI-created stories to motivate him to read for pleasure and to read in environments outside of school settings. According to CET, this environmental freedom facilitates intrinsic motivation. Of interest when considering reading motivation among autistic students is Deci et al.'s (2001) findings that tangible rewards have an undermining effect on intrinsic motivation. It comes as no surprise that an autistic teen who has worked within an extrinsic reward system for more than a decade in school has developed the habit of not reading at home, but this case study shows that with ChatGPT, he can create his own stories using AI-generated literature to read for enjoyment. By using ChatGPT, Michael simultaneously fulfills his needs for agency and reading for enjoyment.

Conclusion

ChatGPT is a beneficial tool for teens to extend their reading behaviors to leisure settings. In this case study, findings show that one autistic teen's intrinsic reading motivation increased with the use of the AI language processing tool. There have been more than 30 years of research on reading motivation but very little on reading with AI text models. The body of research on student use of ChatGPT is still in its infancy, and the exploration of ChatGPT's use in the autistic

community is new. ChatGPT gives autistic individuals control over the characters and settings in the stories they prompt the chatbot to create so that their interest level is sufficient for extended engagement in reading.

Teachers and parents may consider using AI with their teens who are developing readers. Depending on individual support needs, adults may have to guide young people in using the prompt interface. Alternatively, adults may gather information on characters and actions of interest, input the prompt into ChatGPT for the students, and then give the AI-generated stories to them to read.

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A Comparative Overview of Educational Indicators in Norway, Sweden, Germany, and Iran

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Abstract

Education is characterized as a structured and systematic process of acquiring knowledge, skills, and attitudes, forming a fundamental base for the progress of individuals and societies. Educational systems vary across countries, reflecting complex interactions among cultural, social, economic, and technological factors that shape how students learn and experience schooling. The present study aims to provide a descriptive comparative overview of key educational indicators in four countries, Norway, Sweden, Germany, and Iran, in order to explore similarities and differences that may inform policy and educational development. This study adopts a descriptive and synthesis-based approach with a focus on key indicators: the structure and levels of education, governance aspects, and distribution of responsibilities, evaluation and assessment strategies, and funding budgets. Findings of the study reveal considerable variations in governance structures, funding, and evaluation approaches across these countries. Norway and Sweden highlight decentralized structures and equity-based models, while Germany reflects a federal and region-specific model. Iran's educational system follows a centralized decision-making structure. Additionally, as this study employs a descriptive approach and relies on secondary data, findings are interpretive rather than evaluative or causal. Moreover, the synthesis of these key indicators provides policymakers and educators with valuable insights into different governance structures and strategies for promoting educational quality and equity. It also contributes to comparative education by providing a structured comparative overview of four educational systems.

Keywords: education, educational systems, structure of educational systems, four indicators

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Introduction

Education is one of the most essential elements of any social system. According to Boavista (2017), education aims to enhance individuals' self-confidence and provide better job opportunities. Education also enables individuals to participate in public debates and advocate for healthcare and social security policies.

Europe is shaped by diverse cultures and languages, and these distinctions are noticeable in various facets, including the structural variations across different educational systems (Ministers of Education and Cultural Affairs of Germany [MECAG], 2014). Educational structures vary according to each country's policies, programs, and objectives. Moreover, making effective use of other countries' educational policies and experiences is highly beneficial in shaping the education systems of individual countries.

The current study aims to compare the educational systems of three developed countries, Norway, Sweden, and Germany, and a developing country, Iran, in terms of four general indicators. These indicators include the structure and levels of education, governance and distribution of responsibilities, evaluation and assessment, and funding. The structure and levels of education cover the age of children, the study duration, the categorization of education levels, and the curriculum. The governance and distribution of responsibilities deal with the divisions of educational responsibilities between sectors and organizations. The third indicator examines evaluation and assessment procedures in the selected countries, while the fourth addresses funding sources and the sectors responsible for allocating and distributing budgets among schools.

Literature Review

Educational System and Structure: Norway

Norway has a strong welfare-state model, and the state supports the economy and education (Eurydice, 2009). A fundamental principle in Norwegian educational policy is that education is available for all children, and they possess an equal entitlement to education irrespective of their location, gender, cultural, or social background (Norwegian Ministry of Education and Research [NMER], 2010). Norway's educational system is highly comprehensive, and Norwegian educational policy attempts to provide equal educational chances for students regardless of their gender, cultural identity, geographic location, and economic status (Eurydice, 2010).

Additionally, all public education in Norway is provided without charge, but kindergartens have parental fees (NMER, 2010). In Norway's educational system, both public and higher education are provided free, but early childhood education and care are not free of charge. It is worth mentioning that student selection is not based solely on academic ability and the option for year repetition is not available (OECD, 2011). Moreover, although Norway spends high levels on education and the outcomes of the International Student Assessment (PISA) in the OECD's Program are at or above the OECD average, these results have raised concerns. The educational quality varies between municipalities sharing similar characteristics. This variation has emphasized the need for improved national monitoring of educational quality. During the last decade, Norway has focused more on making national tools and processes to supervise the educational system's quality at different levels to improve practices and increase students' performance (Nusche et al., 2011).

Levels of Education

According to Nusche et al. (2011), the educational system in Norway is composed of three phases: Pre-primary education phase (typical ages 1-6): This level is held in both public and private daycare centers. The national government considers objectives for the pre-primary education level and allocates funding for these centers. It is the responsibility of municipalities to run and monitor institutions. Participation at this level is not mandatory (Eurydice, 2010).

Compulsory education phase (typical ages 6-16): Norwegian students start their formal education at the age of 6. The compulsory education phase comprises ten years and is organized into the primary level (school years 1-7) as well as the lower secondary level (school years 8-10). Upper secondary education phase (typical ages 16-19): This educational level lasts three or four years and includes twelve educational programs comprising three core programs and nine vocational programs. Attendance at the upper secondary education level is optional.

According to Nusche et al. (2011), the Norwegian national curriculum for knowledge promotion aims to concentrate more on fundamental skills and result-based learning. This program encompasses the whole education system, spanning from primary level to upper secondary education level, and consists of four essential parts:

- The core curriculum: It incorporates inclusive goals for both the primary and secondary education levels, as well as explains the fundamental cultural values and educational knowledge (Nusche et al., 2011).
- The quality framework: This framework elaborates school owners' liabilities to improve education quality (Nusche et al., 2011).

- The subject curricula: This curriculum outlines student competency objectives for compulsory schooling (Years 2, 4, 7, and 10), as well as for each school year in upper secondary education (Vg1, Vg2, and Vg3). The competence objectives of an individual subject include the combination of five essential skills: verbal expression, reading literacy, numeracy, written expression, and computer literacy (Nusche et al., 2011).
- The structure of distributing teaching hours and subjects: For each subject, this structure describes the required minimum teaching hours. While school owners have the freedom to autonomously assign extra teaching hours in specific subjects, separate funding is necessary for this purpose (Norwegian Ministry of Education and Research [NMER], 2010).

Notably, school owners are eager to set particular local objectives corresponding to national objectives. They are also liable to accept and perform the curriculum at the local level. Defining objectives for each year falls under the responsibility of school principals, whereas schools bear the responsibility of specifying the content, organization, and teaching methods (NMER, 2010). Moreover, the subjects covered in both primary and lower secondary levels in the Norwegian education system are "Norwegian, mathematics, social science, Christianity, Religion and Ethics Education (CREE), arts and crafts, natural science, English, foreign languages/ language in-depth studies, food and health, music, physical education, student council work, and optional program subject" (NMER, 2010, p. 4).

Governance and Distribution of Responsibilities

Norway follows an ancient and fixed tradition of school autonomy. Local communities in Norway have ownership and responsibility for individual schools instead of being under the supervision of national authorities. This decentralized running process is particularly noticeable at both primary and lower secondary education levels. Four hundred thirty municipalities manage schools, excluding a small private sector (Nusche et al., 2011). County authorities are responsible for upper-secondary education and training (NMER, 2010).

In addition, the Norwegian Parliament (*Storting*) sets general educational goals, accepts the legal structure, and establishes standards. The Ministry of Education and Research in Norway is tasked with regulating national education policies, encompassing acts, regulations, and curricula. School owners, including counties, municipalities, and private providers, are responsible for organizing and managing school services, providing resources, and improving the quality and progress of education within their relevant schools (Nusche et al., 2011).

Evaluation and Assessment

In Norway, a National Quality Assessment System (NQAS) has been developed to support education authorities, school owners, and schools in measuring students' performance and introducing appropriate strategies for their improvement. This system provides both national guidance and flexibility, granting schools and local authorities substantial autonomy to design and administer local evaluation strategies (Nusche et al., 2011).

According to Nusche et al. (2011), in the Norwegian educational system, student assessment relies on the integration of both teacher-conducted classroom evaluations and centralized assessments. Additionally, teachers bear the main responsibility for evaluating students at all levels of the school system, encompassing both formative and summative formats:

- In the 1-7 school year levels, the main objective of assessment typically revolves around both diagnostic and formative formats. At these levels, no marks are given to students.
- In the 8-10 school years and upper secondary education level, the main emphasis is on a summative format based on the overall achievement marks of students.

Funding

Norwegian counties and municipalities earmark financial support to schools in accordance with various factors, for example, students' enrollment, geographical location, and internal organization of schools (Norwegian Directorate for Education and Training [NDET], 2007). They also provide budgets to finance school education, including local tax incomes and central state transfers (Eurydice, 2010).

Educational System and Structure: Sweden

The national agency for education in Sweden, or *Skolverket,* is responsible for managing the Education Act of 2010 (*Skollagen*), which oversees all levels of the Swedish educational system and emphasizes principles such as gender equality (Kandel, 1933; Jarvis, 2000; Berglund, 2017). Sweden has a comprehensive, inclusive, and fairly equitable educational system. The education system in Sweden is also free of charge for all Swedish nationals and individuals from the EU/EEA and Switzerland (Peterka et al., 2017).

According to BrandãoI (2019), in the Swedish educational system, the structure is as follows:

- Basic Education phase: Includes the Early Childhood Education stage (*förskola*), the Elementary School stage (*grundskola*), and the Upper Secondary School stage (*gymnasium*).

- Higher Education phase: Comprises Post-secondary level (*folkhögskola*, *kompletterand utbildning* or *yrkeshögskolan*), College level (*högskola*), and University level (*universitet*).

Levels of Education

Early Childhood Education (ECE): Participation in ECE is voluntary and may take place in public, private, or independent schools. A one-year-old Swedish child can enroll in preschool at the municipal ECE School (*förskola*) (Kazamias, 2001). In Sweden, preschool class is entirely free of charge, even for children with special needs. This class aims to simplify the transition process from the preschool level to the initial year of elementary school. In addition, the main aim of ECE level and preschool classes is to provide children with a range of pedagogic activities that inspire both the child's creativity through playing activities in groups and the development of learning, as well as help him/her understand and discover the environment (BrandãoI, 2019). It is worth noting that in Sweden, there are high enrolment rates in early childhood education (Peterka et al., 2017).

Compulsory Education: After preschool, children begin nine years of compulsory education, subdivided into three three-year periods. This stage, known as *Grundskola*, is compulsory and free of charge. The three periods are *Lågstadiet* (the first period includes the first three years), *Mellanstadiet* (the second period), and *Högstadiet* (the third period) (Makuwira & Ninnes, 2004). The education level is compulsory for all students from ages 7 to 16 (Peterka et al., 2017). Compulsory school attendance in Sweden is different from some other European countries. Swedish law emphasizes that education, not schooling, is compulsory. Thus, home-schooling is almost non-existent in Sweden (Berglund, 2017).

Secondary School or Upper Secondary Education: Secondary school education, known as *gymnasiet*, is non-compulsory and lasts three years. Although attendance is voluntary, most young people in Sweden participate. Secondary education (*gymnasieskola*) is free and offers both national and introductory programs, as well as specialized programs beyond the standard structure outlined in the national program (Noah & Eckstein, 1969).

Governance and Distribution of Responsibilities

Sweden has a decentralized education system guided by national priorities. Based on the Education Act, 290 municipalities are responsible for public schools (Peterka et al., 2017). At the national level, the central government oversees education policy, curriculum development, and national goals, supported by three independent agencies as follows:

- The Swedish National Agency for Education assesses the procedures of both municipalities and local schools. This agency, in collaboration with the Ministry, defines national objectives and curriculum, as well as produces various statistics related to education.
- The Swedish Schools Inspectorate possesses the authority to establish new autonomous schools, and ensures compliance with central laws and regulations by both municipalities and the organizers of autonomous schools and the schools themselves.
- The National Agency for Special Needs Education oversees attempts made by the government related to special educational needs.

Evaluation and Assessment

The primary emphasis on student assessment in the Swedish educational system lies in formative format during the initial stages of education. Additionally, students are encouraged to determine specific learning objectives using personalized development plans, self-assessment, and peer evaluations. Teachers use classroom-based assessments to collect various data on student development and give regular feedback to students (Peterka et al., 2017).

Additionally, the Swedish schools are mainly accountable for evaluation and assessment. The schools have two kinds of evaluation procedures: internal and external. Schools, school regulations, and compulsory education curricula determine particular internal school evaluation procedures. In this regard, the Swedish Schools Inspectorate aims to control education quality and fulfill regulations, and is also responsible for external evaluations. Moreover, in Sweden, there is a requirement to increase the evaluation procedures of schools to ensure uniformity and a clear direction toward educational development (Peterka et al., 2017). It is worth noting that there is no formal teacher appraisal system in Sweden. While the Ministry of Education and Research in Sweden is mainly accountable for creating a framework for assessing the educational system's quality, the Swedish National Agency for Education has practically the authority for system evaluation (Peterka et al., 2017).

Funding

The procedure of funding in the Swedish education system is principally public. Municipalities and autonomous education providers are responsible for financing and funding the education system. Each municipality is also accountable for deciding how resources will be distributed between schools. In both primary and secondary schools in Sweden, the budgeting process is decentralized to municipalities, with finances derived from local taxes and distributed in different forms depending on the municipality (Peterka et al., 2017). The responsibility of the

home municipality of students is to allocate school funding, regardless of whether students attend a public school or an autonomous school. It is also worth noting that the accessibility of school choice affects school funding because funding is related to students rather than schools (Peterka et al., 2017). In addition, the primary responsibility of the Swedish government is to allocate public funding for higher education institutions. Sweden's government can also allocate financial support to students through study grants and loans to meet students' living expenses (Peterka et al., 2017).

Educational System and Structure: Germany

The education system in Germany is segmented into three stages: early childhood education, primary education, and secondary education (Ministers of Education and Cultural Affairs of Germany, [MECAG], 2014). Germany's school system comprises public and private schools, such as religious or Waldorf (Lergetporer et al., 2017).

Levels of Education

Early Childhood Education (ECE): Educational institutions catering to children provide ECE programs until age six. These establishments are designated to either the ECE or the primary education sector based on the specific Land. While this level of education is typically not compulsory, most of the Lander authorities are given the right to make it compulsory (MECAG, 2014). Enrolment rates of German children at the ECE level are high, and participation in Early Childhood Education and Care (ECEC) contributes to promoting equity within the educational system (Organisation for Economic Co-operation and Development [OECD], 2014).

Compulsory Education: All German children enter school at six and start general compulsory schooling, which includes nine years of full-time education. They enroll in the *Grundschule,* which includes grades 1 to 4. Although the role of preschool is to guide children toward more play-oriented learning approaches, the role of primary school is to direct students toward more systematic and structured approaches to learning in an educational setting. In addition, primary school plays a role in adjusting both the format and substance of instructional programs to cater to the diverse learning needs and abilities of individual students. The primary school aims to establish the foundation for subsequent educational levels as well as lifelong learning. Moreover**,** at the primary school level, the curriculum emphasizes reading and writing skills, as well as basic arithmetic skills. The teaching subjects encompass German language, foundational mathematics, comprehensive *Sachunterricht* (general studies), art, music education, physical education and sports, and instruction in religious studies (MECAG, 2014).

After completing full-time mandatory education, students enter a subsequent period of part-time mandatory education, known as mandatory vocational education, which lasts for three years (MECAG, 2014).

Secondary Education: The secondary level covers grades 5/7 to 12/13 in the Lander. Its structure is segmented into diverse educational paths, and various school types bear the responsibility for them, including Hauptschule, Realschule, Gymnasium, and Schularten mit mehreren Bildungsgangen (MECAG, 2014). Students move into the upper secondary education stage after completing compulsory schooling. The kind of school is contingent on the qualifications attained and entitlements acquired upon completing lower secondary education (MECAG, 2014).

Governance and Distribution of Responsibilities

The educational system is decentralized in Germany, and the responsibilities are distributed among the Federation, the *Länder,* and local authorities (OECD, 2014). Germany's Federal Ministry of Education and Research is liable for the areas under the authority of the Federation, including overseeing education and the care of children in daycare centers and child-minding services. Moreover, the management of the education system in various domains, including the educational domain at the school level, the tertiary education sector, the adult education sector, and the continuing education domain, falls under the responsibility of the Lander (MECAG, 2014).

Evaluation and Assessment

An essential part of the comprehensive strategy for the education system is the regular assessment of student achievement (OECD, 2014). In Germany, preschool assessment depends on curriculum needs and evaluates students' knowledge, abilities, and skills, with teachers responsible for conducting the assessments. The assessment of the first two grades of primary school is a yearly report that fully describes a student's development, strengths, and weaknesses in different learning majors (MECAG, 2014). In addition, Germany has a highly structured legal framework for external school evaluation (OECD, 2014).

Funding

In Germany's education system, public primary and secondary schools are free of charge (OECD, 2014). In Germany, decisions concerning the financing of education are jointly made by the Federation, Länder, and local authorities (Kommunen). It is worth noting that both the Länder, in addition to local authorities, contribute significantly to most governmental

expenditures (MECAG, 2014). In addition, the division of duties between the Länder and local authorities plays a vital role in financing the public sector. While local authorities cover the expenses for non-teaching staff and material costs, the Lander is liable for covering the payroll for teaching staff (MECAG, 2014).

Educational System and Structure: Islamic Republic of Iran

Iranian schools come in two categories: publicly funded schools that are free of charge, and privately owned schools (Menashri, 1992). Iran's centralized education system stems from France's old education system. The central government controls the conditions of policymaking and educational decision-making. Provinces and local groups need the opportunity to create or take new actions or measures to apply their plans or notions (Behbahania, 2010). In 1951, the first transfers occurred, and the provincial and city departments assumed control of specific aspects of crucial authorities and took on responsibilities, including managing employment, facilitating the mobility of teachers and staff in provinces, distributing funds, and handling budgets for certain expenditures. Acting on the Ministry of Education's behalf, the related departments in the provincial centers and cities take on more power and responsibilities; nonetheless, the central government possesses decision-making authority and operates in a centralized manner (Behbahania, 2010). While the Ministry of Education in Iran is dedicated to promoting the process of decentralization, predicting the forthcoming developments in education within this country remains challenging due to ongoing cultural shifts (Madandar et al., 2012). Additionally, some crucial factors are mainly to be noticed in the performance of the Iranian education system, including principals, teachers, student councils, parent-teacher associations, and school councils (Moradia et al., 2012). It is important to note that the educational structure of Iran has four stages: pre-primary education stage, primary education stage, lower secondary education stage or guidance level, and upper secondary education stage or high school.

Levels of Education

Iran's formal education system encompasses primary education (six years) and secondary education (six years). The new school year commences on September 21 and extends until June 21 of the following year. To enter university, each student must get a high school diploma (Bakhshalizadeh, 2021).

Pre-primary education level: In Iran, the pre-primary education phase lasts one year, and children typically begin this stage at the age of five. The program's primary focus at this level is on behavioral and pedagogical techniques, fundamental “life skills, natural sciences, hygiene,

literacy, history, and religious history and practice" (Madandar et al., 2012, p. 3). In addition, the pre-primary education level is non-compulsory and helps children enter the compulsory primary education level. Regular activities related to the pre-primary level and a one-month Farsi course constitute the curriculum of this level. The Farsi course is a requirement in those areas where the primary language is not Persian (Bakhshalizadeh, 2021).

According to Bakhshalizadeh (2021), the primary aims of the pre-primary education level include:

- to support children's physical, mental, emotional, and social development
- to improve socio-emotional growth and self-confidence
- to encourage participation in group activities
- to reinforce religious perspectives and ethical values
- to improve oral language progress and develop communication skills

Primary education: The first level of formal compulsory education, or primary education, consists of two periods, each lasting three years. It covers grades 1 to 6 (6–11 years old). In primary education, one teacher typically teaches all subjects, apart from religion, art, and physical education, in the first period (grades 1-3) (Bakhshalizadeh, 2021). Additionally, the primary school (Dabestan) in Iran includes "Qur'an, Persian composition, dictation, Persian reading comprehension, social studies, arts, hygiene, natural sciences, mathematics, and physical education, but the primary emphasis is on reading comprehension (Madandar et al., 2012, p. 4).

According to Bakhshalizadeh (2021), the crucial goals of the primary level are as follows:

- Contribute to moral development
- Promote literacy, numeracy, and social skills
- Train personal hygiene

Lower secondary education or guidance level: Following primary school, students begin middle school or the guidance level (Rahnamayi) (Menashri, 1992). The subsequent stage of compulsory education consists of a three-year lower secondary phase. It includes grades 7-9 for 12–14-year-old students (Bakhshalizadeh, 2021). In addition, the lower secondary curriculum encompasses subjects, for instance, "history, geography, Arabic, vocational training, foreign languages, and defense preparation," but the primary emphasis is placed on mathematics and natural sciences (Madandar et al., 2012, p. 4). In addition to the primary education subjects, this

stage has second language instruction, vocational education, and defense education for boys (Bakhshalizadeh, 2021).

This educational level emphasizes guiding students to explore a specific area of expertise rather than instructing general knowledge (Madandar et al., 2012). According to Bakhshalizadeh (2021), the essential purposes of the lower secondary education stage include:

- Promote moral and intellectual skills
- Enhance general knowledge
- Reinforce academic discipline and improve scientific imagination

Upper secondary or high school level: This stage comprises three years, including grades 10–12 for 15–17-year-old students. They can select one of the three study programs (academic, technical, vocational, or KarDanesh). Each program includes various goals and is planned for students with different skills and interests. For instance, academic programs help students enter university; these programs emphasize mathematics, natural science, or the humanities. The other two programs help students enter the labor market after graduating high school. They can receive a post-diploma degree and later have the chance to enter a vocational college (Bakhshalizadeh, 2021).

Governance and Distribution of Responsibilities

K-12 education falls under the responsibility of the Ministry of Education, while higher education is overseen by the Iranian Ministry of Science and Technology (Menashri, 1992). In addition, the Ministry of Education bears the responsibility for "educational planning, financing, administration, curriculum, textbook development, teacher training, grading, and examinations" (Madandar et al., 2012, p.2). As per the constitution of Iran, the government is dedicated to offering free education for students until the end of high school (Ansari, 2016). Moreover, the Organization for Educational Research and Planning, along with the Welfare Organization, supervises and prepares educational programs for preschool centers (Bakhshalizadeh, 2021).

Evaluation and Assessment

It is the teacher's responsibility to assess educational activities. There are two types of assessments in Iran's educational system: continuous and formative. Continuous assessment depends on the participation of students in educational tasks, for example, completing homework, participating in class questions, and undertaking out-of-class activities. Examinations may be written, oral, or practical, depending on the subject content, with written exams being the most common. The minimum passing score for progression to the next grade is ten, and the

maximum is 20 (Madandar et al., 2012). Testing and assessment are strictly based on the content of instructional textbooks, and national exams are also used to evaluate students' overall performance (Madandar et al., 2012).

Funding

In Iran, the general budget finances all education expenses, as the government is responsible for meeting the needs of education due to its significant social benefits (Behbahania, 2010; Ansari, 2016). In addition to government funding, non-profit educational institutions, parent-educator associations, municipal bodies, donors supporting school buildings, student councils, boarding schools, and the boards of trustees of certain schools also play a substantial role in fostering public participation in the education system (Ahmadi et al., 2016).

Methodology

Nature of the Study

This study aims to provide a descriptive comparative overview of key educational indicators. The present study used a desk-based comparative policy analysis approach, focusing on the synthesis of secondary data to investigate and compare key indicators of four countries: Norway, Sweden, Germany, and Iran. Relying exclusively on secondary data, the study analyzed policy reports, statistical data, and existing literature to determine similarities and differences in the educational indicators of the chosen countries.

Criteria for Selection of Countries

Three main criteria were considered to purposively choose the four countries:

Diversity of governance structures: Norway and Sweden demonstrate decentralized systems. Germany has a federal structure, but Iran runs a highly centralized educational system.

Variety in socio-economic and cultural settings: The study samples include two Nordic countries (Norway and Sweden), a federal European economy (Germany), and a developing Middle Eastern country (Iran).

Accessibility of reliable data: International organizations (the OECD and Eurydice) and national reports offer accessible and reliable secondary data for comparative purposes.

Sources of Data

The present study employed exclusively secondary data, including international educational reports and databases (OECD and Eurydice), national policy documents, annual reports, and statistics from the ministries of education, as well as prior academic studies that

offer interpretive information. The collection of these sources ensured the richness and reliability of the data while providing multiple perspectives for analysis.

Analytical Approach

This study utilized a descriptive comparative approach with a structured basis, focusing on four key indicators widely recognized in the field of comparative education: structure and levels of education, governance and distribution of responsibilities, evaluation and assessment strategies, and funding budgets. Information collected from secondary sources was systematically organized under these educational indicators. The synthesis of information highlighted similarities and differences across the selected countries. Findings and interpretations were descriptive rather than causal or evaluative.

Results and Discussion

The present study employed a desk-based comparative policy analysis approach. This section aims to synthesize the descriptive results obtained from secondary sources across four key indicators: structure and levels of education, governance and distribution of responsibilities, evaluation and assessment strategies, and funding and budgeting.

Structure and Levels of Education

All four countries share the fundamental stages of education, but they differ in how these stages are organized and when students are directed into different educational pathways. In Norway and Sweden, universal early childhood education is highlighted, and upper secondary education is broadly available, emphasizing equitable access. The educational system in Germany offers differentiated secondary school types, which can create regional inequalities. Iran has a highly centralized system, and early childhood education is comparatively less accessible.

Governance and Distribution of Responsibilities

Governance models vary across the four countries. Norway and Sweden follow decentralized systems with local municipal management; Germany operates under a federal model with a multi-level structure across the Länder; and Iran maintains a highly centralized model with ministerial control, ensuring uniformity in policy and curricula.

Evaluation and Assessment

Assessment approaches combine teacher-based assessments with national assessments. Nordic countries (Norway and Sweden) emphasize formative and classroom-based assessments

alongside national tests, while maintaining a strong focus on teacher autonomy. Germany combines teacher assessments with structured external evaluations, while Iran's evaluation system depends on high-stakes national exams and classroom assessments, closely aligned with textbook content.

Funding and Budgeting

Funding systems vary in terms of sources, methods of distribution, and the extent to which funds are allocated to individual students or managed centrally. In Norway and Sweden, high public investment is the main funding source, and municipalities hold primary responsibility for distributing these funds. In Germany, the federal government, Länder, and municipalities share responsibility for financing, teacher salaries, and major recurring costs. Iran relies primarily on the central government budget and public contributions, such as non-profit organizations and parents.

As this study is descriptive and relies exclusively on secondary data, the findings are interpretive rather than causal. Nevertheless, the results suggest important implications for policy and practice. Governance models may benefit from balancing local autonomy with national guidance to promote equity. Evaluation mechanisms should emphasize formative approaches and teacher-based assessments while limiting overreliance on high-stakes national examinations. Equitable funding remains critical, particularly in ensuring additional resources for disadvantaged regions. Promoting long-term equity also requires expanding access to high-quality early childhood education.

Conclusion

The present study compared the educational systems of four countries: Norway, Sweden, Germany, and Iran, focusing on four key indicators: structure and levels of education, governance and distribution of responsibilities, evaluation and assessment, and funding. Various reasons exist for selecting the countries of this study. Prior scholarship has noted the significant distance separating developing countries from economically advanced education systems (Franco, 1992). In addition, they are education systems shaped by distinct historical trajectories, despite certain surface similarities (Franco, 1992, pp. 34–35). Moreover, it is customary for nations such as Iran to acquire international expertise and adopt models from more advanced countries (Mahzoun, 2019).

The comparative synthesis revealed clear differences between the Nordic countries (Norway and Sweden), Germany's federal model, and Iran's highly centralized structure. The priority in the educational systems of Norway and Sweden is equity, achieved through

implementing comprehensive frameworks, play-driven early childhood education, and strong formative assessment approaches. Germany's federal structure implements early tracking that can increase inequalities in certain areas. In contrast, Iran's centralized system reinforces consistency and uniformity but limits local adaptability, improvement, and responsiveness.

Several lessons emerge for developing countries such as Iran. Broadening the availability of high-quality ECE, delaying early tracking while integrating national supervision with local autonomy can contribute to more equitable outcomes and improved learning achievements. Decreasing the overreliance on high-stakes national exams and employing formative, teacher-based assessments can promote in-depth learning. Moreover, introducing equitable funding models that provide disadvantaged areas with additional resources can mitigate ongoing inequalities in the quality of education.

Future research should transcend descriptive comparisons by conducting field studies and incorporating structured comparative education models to investigate how variations in governance structures, assessment methods, and funding mechanisms affect educational outcomes. Such examinations can offer practical insights for policymakers aiming to develop education systems that promote equity and are responsive to local contexts.

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