



RESEARCH ARTICLE

LEADERSHIP DEVELOPMENT IN HEARING-IMPAIRED PEOPLE THROUGH GAMES: A CASE STUDY AT SOLIDATIC BENIN

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ARTICLE INFO

Article History:

Received 25th July, 2025
Received in revised form
06th August, 2025
Accepted 19th September, 2025
Published online 30th October, 2025

Keywords:

Leadership, Hearing Impairment,
Interactive Games, exp Eriential Learning,
Social Inclusion.

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ABSTRACT

Introduction: Leadership is a multifaceted concept encompassing various aspects of behavior and skills. This dissertation explores the development of leadership skills among hearing-impaired people at SOLIDATIC Benin through the use of interactive games. **Objective:** to assess the impact of these games on participants' communication, collaboration and self-confidence, based on David Kolb's experiential learning theory. **Method:** A mixed methodology was adopted, combining pre- and post-intervention questionnaires and semi-structured interviews with 7 experts. 43 participants were engaged in several games designed to encourage interaction and group dynamics. **Results:** The results showed a p-value < 0.05, signifying a significant improvement in leadership skills, particularly in communication and decision-making. **Conclusion:** Interactive games created an inclusive learning environment, empowering participants. This study suggests that integrating games into educational programs can transform the development of leadership skills in the hearing impaired, and paves the way for future research into social inclusion through play activities.

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Citation: Oscar D. O. Azé, Frédéric Houessou, Adolphe Ahonnon, Séverin Agbossou, Judith Ahounou and Barnabé Akplogan. 2025. "Leadership development in hearing-impaired people through games: a case study at solidatic Benin.". *International Journal of Current Research*, 17, (10), 35038-35045.

INTRODUCTION

In Benin, as in many countries, people with hearing impairments face unique challenges when it comes to social and professional integration. Games, often used as educational and therapeutic tools, offer a unique opportunity to foster a variety of skills, including leadership (Northouse, 2018). Leadership is a multifaceted concept that encompasses various aspects of behavior and skills. It is a central concept in the fields of social sciences and sports, often defined as the ability to influence, motivate, and guide a group toward achieving common goals (Northouse, 2018). This definition highlights the importance of the relationship between the leader and the group, as well as the leader's ability to motivate and guide. Leadership development in individuals with hearing impairments is a relatively underexplored area in the field of Physical Activity and Sports Sciences (STAPS). While leadership research has largely focused on populations without impairments, it is essential to explore how this concept manifests and develops in specific contexts, such as that of people with hearing impairments. People with hearing impairments face specific challenges that can influence their personal and

professional development. According to Moores, people with hearing impairments encounter barriers in the areas of communication, learning, and social integration (Moores, 2001). These challenges can also impact their development as leaders. It is also imperative to note that improving leadership skills in this population is crucial for their social and professional integration, as well as their personal growth. Continuing in the same vein, in an interview given to William Loko-Roca, General Secretary of National Association of Deaf of Benin by UNDP Benin, "the hearing impaired are often victims of exclusion in society because of the communication difficulties they encounter, whether in the family circle or in society in general" (UNDP Benin, 2022). During his interview, he states that for better communication with the hearing impaired, it is important to learn sign language. However, there is evidence that individuals with hearing impairments can effectively develop leadership skills. A study by Lu and colleagues demonstrates that individuals with hearing impairments can achieve high levels of success in leadership roles when provided with appropriate support and tailored opportunities (Lu et al., 2016). For example, inclusive educational programs and social environments can foster the development of leadership skills in individuals with hearing impairments (Harris, 2007). Similarly, hearing impairments can

influence leadership development in unique ways by altering communication patterns and group dynamics. According to Hager and Hall, individuals with hearing impairments often develop distinct leadership skills in response to the specific challenges they face (Hager & Hall, 2004). Inclusion and integration of these individuals in group activities, such as games, can play an important role in enhancing their leadership skills and confidence (Cox, 2007). Games and sports activities represent particularly interesting contexts for studying leadership development in people with hearing impairments. They offer opportunities for collaboration, problem-solving, and group decision-making, while also providing a stimulating environment for practicing leadership skills (Smith & Smoll, 2007). Weiss's work confirmed that sports provide a platform for learning skills such as communication, cooperation, problem-solving, and conflict management (Weiss, 2008). Weiss thus agrees with Smith & Smoll. As for Eys and colleagues, games can help overcome communication barriers and encourage positive interactions between group members, thus facilitating leadership development (Eys et al., 2013). Referring to games, Smith and Hsieh believe that leisure activities are an excellent tool for integration among populations living with disabilities, particularly those with hearing impairments (Smith & Hsieh, 2017). For Reichhart, games, as fun and interactive activities, provide an ideal framework for leadership development in people with hearing impairments. They not only strengthen cognitive and social skills, but also develop essential emotional skills (Reichhart, 2007). For example, role-playing and team games promote communication, cooperation, and decision-making, key leadership skills. To support Reichhart's position, authors such as Cuvellier and Quiquempoix have written that games can improve self-esteem and self-confidence, fundamental elements for assuming leadership roles (Cuvellier & Quiquempoix, 2019). According to France Assos Santé, the benefits of games for people with hearing impairments are numerous. They help create social connections, reduce isolation, and promote better integration into society (France Assos Santé, 2019). Furthermore, Empan's studies have proven that adapted games can be an effective way to overcome communication barriers and promote better understanding and acceptance of differences (Empan, 2003). As part of a socio-educational animation project implemented at SOLIDATIC Benin by the Francophone Student Leader Club "Les Elites de l'INJEPS" in 2022, the final evaluation noted that the games carried out with the learners of this center seem to offer a favorable framework for the development of leadership skills among them. How can games contribute to leadership development among people with hearing impairments in Benin? What are the mechanisms by which these playful activities influence leadership skills? This study aims to assess the impact of games on the development of leadership skills among people with hearing impairments in SOLIDATIC Benin.

Research question: What are the effects of games on developing leadership skills among hearing-impaired participants in SOLIDATIC Benin? More specifically, how can games foster essential skills such as communication, collaboration, and decision-making? This research question provides the basis for formulating clear hypotheses and research objectives. A hypothesis was formulated for this research.

- **Hypothesis:** The use of interactive games promotes the development of leadership skills among hearing-impaired participants at SOLIDATIC Benin. Based on this hypothesis, the general objective and two specific objectives are formulated.
- **Objectives:** The general objective of this research is to evaluate the impact of interactive games on the development of leadership skills among hearing-impaired participants at SOLIDATIC Benin.

Specifically, we aim to:

- Identify the types of interactive games that promote the development of communication, collaboration, and decision-making skills among hearing-impaired participants.
- Analyze how gaming experiences contribute to strengthening participants' self-confidence and personal initiative.

MATERIALS AND METHODS

Type of Research: The study is experimental and used a mixed-method approach, combining both qualitative and quantitative methods. The quantitative approach measured the effects of games on leadership skills (motivation, self-control, communication, collaboration, and decision-making) before and after the intervention through interactive games. The qualitative approach was used to gather the opinions of SOLIDATIC Benin trainers and managers on leadership development among the hearing impaired. It also allowed gathering participants' perceptions and experiences through semi-structured interviews and observations, in order to better understand the impact of games on leadership development.

Survey Population: The survey population includes experts or specialists who deal with issues related to hearing loss, as well as hearing-impaired individuals aged 5 to 20 years participating in SOLIDATIC Benin's programs. This age range allows for the inclusion of both children and young adults, ensuring diversity in developmental and experience levels.

Sampling

Non-probability method (purposive selection): Non-probability convenience sampling is used, given the specificity of the target population and available resources.

Sampling technique: Convenience sampling is the appropriate technique for our research because it maximizes participant accessibility while respecting logistical constraints. Convenience sampling involves selecting participants who are easily accessible and available for research. This method is often used in contexts where recruiting participants is difficult due to population specificities or logistical constraints. Given time and resource constraints, this method allows for a representative sample of those already involved in the program, ensuring rapid access to participants. Furthermore, the selected participants will have similar characteristics (hearing impairment, program engagement), which can facilitate the analysis of results and the evaluation of the impact of the games on their leadership development. This method allows for sample size adjustment based on participant availability, which is essential in an educational setting where participation can fluctuate.

Sample Size: The sample consists of 50 individuals, including 43 hearing-impaired individuals aged 5 to 17, and 7 hearing-impaired specialists, including 3 members of the SOLIDATIC Benin management team (the Center Director, 1 educator, and 1 childcare specialist), 1 international expert from Côte d'Ivoire, 1 resource person from the National Federation of the Disabled in Benin, and 2 Benin civil society actors specializing in developmental and leadership games. This size allows for significant results while allowing for in-depth observation of individual and group interactions. Diversity criteria will also be considered to ensure that the sample represents different age groups and skill levels.

Experimental method

Field survey

Pre-Survey: A pre-survey during the implementation of the "Socio-Educational Activities with People with Disabilities (ASEPESH)" project of the French-speaking Student Leader Club, Les Elites, of INJEPS, was conducted from November 19 to December 10, 2022, with the deaf-impaired members of SOLIDATIC Benin to ensure the feasibility of this research. The parents of the deaf-impaired members, as well as the members of the SOLIDATIC Benin children's supervisory staff, were questioned about the children's level of leadership engagement within the framework of this project.

Data processing: This involved manually analyzing the data collection forms, taking into account our objectives and

hypotheses. Questionnaire responses were entered using Excel 2013 software. Means, standard deviations, and comparative analyses (t-tests) were calculated to assess changes in participants' skills before and after the intervention. Audio recordings of the interviews were transcribed to facilitate analysis. We then identified recurring themes in participants' responses, focusing on perceptions of the games and their impact on leadership. Comparing the quantitative and qualitative results provided an overview of the impact of the games on the development of leadership skills.

Data collection techniques and tools

Data collection technique

•**Observations:** Observations can be participatory or non-participatory, depending on the researcher's level of involvement in the context studied. In this study, participant observations during game sessions allowed us to collect data on the behaviors, interactions, practices, and environment of the hearing-impaired participants of SOLIDATIC Benin in response to the leadership situations presented by the games.

•**Interviews:** According to Fenneteau, individual interviews differ primarily based on the interviewer's behavior and the degree of directionality of their interventions (Fenneteau, 2015). In this research, the interview collected verbal and non-verbal data, such as gestures or facial expressions, gestures, and intonations from the children at the end of the series of games. Interviews with SOLIDATIC Benin managers and other hearing impairment specialists provided insight into the context, needs, and expectations of hearing-impaired people in terms of leadership.

•**Questionnaire survey:** A structured questionnaire was developed to assess communication, collaboration, and self-confidence skills among hearing-impaired participants before and after the gaming sessions. This allowed us to measure the changes and impacts of the games on their personal development.

•**Games:** Games were specifically designed to stimulate and develop leadership skills among hearing-impaired participants, taking into account their characteristics, preferences, and constraints.

Statistical analysis: The collected data were analyzed using statistical tests to assess the intervention's impact on leadership skills development. Frequencies and percentages for qualitative variables, and means, medians, and standard deviations for quantitative variables, were calculated to provide an initial picture of data distribution and sample homogeneity or heterogeneity. The dependent variables (motivation, self-control, communication, decision-making, and collaboration) were compared based on data collected before and after the gaming workshops. The independent variables (gaming typology, frequency, session duration, and feedback) were considered using the TUET method to ensure their significant impact on leadership skills development among the hearing-impaired participants of SOLIDATIC Benin. Des p-values ont été calculées pour déterminer la significativité des différences observées entre les scores avant et après intervention. Toutes les analyses ont été effectuées avec un seuil de significativité de 5 % ($p < 0,05$), indiquant que les changements observés sont statistiquement significatifs. Statistical analyses helped answer our research question and test our single hypothesis.

RESULTS

From this table, we note that the majority of participants are male (62.79%), while females are underrepresented (37.21%). It would be interesting to explore whether leadership skills vary between boys and girls. Furthermore, almost 95% of participants are between 5 and 15 years old, with a very low representation of 16–20-year-olds (only 4.65%). This means that the conclusions drawn are mainly relevant for young children and pre-adolescents. There could be differences between young children and adolescents, as leadership abilities can

Table 1. Characteristics of the survey population (N = 43, with N representing the total number of respondents)

	Settings	Staff	Percentage
Gender	Male	27	62,79
	Female	16	37,21
	Total	43	100
Age	[05 ; 10]	21	48,84
	[11 ; 15]	20	46,51
	[16 ; 20]	02	4,65
School level	CI	07	16,28
	CP	17	39,53
	CE1	09	20,93
	CE2	10	23,25

vary depending on the age group. On the other hand, the majority of participants are at the CP level (39.53%), with a relatively balanced distribution between CI, CE1 and CE2. From this table, we note that all p-values are extremely low (well below 0.05), indicating that the differences observed between skills before and after the intervention are statistically significant. This suggests that the intervention (here, the games) had a positive impact on the development of these leadership skills. The games program presented in this table is designed to promote leadership development in hearing-impaired people through a fun and educational approach. The games offer a balance between the development of social skills (communication, mutual aid, collaboration), cognitive and motor skills (reflection, precision, coordination), values and attitudes (courage, perseverance, empathy). The integration of rules and symbolic games shows that the program aims not only to entertain participants, but also to teach them skills essential to their personal and social development. La figure 1 montre un graphique à barres représentant la probabilité d'exercice de leadership des déficients auditifs au sein d'une équipe sur une échelle de 10. La majorité des participants (67 %) sont considérés comme probablement capables d'exercer un rôle de leadership, ce qui indique une reconnaissance de leur potentiel à diriger une équipe. Un tiers (33 %) des participants sont classés comme ayant une forte probabilité d'assumer une fonction de leader, soulignant que certains déficients auditifs sont perçus comme ayant des compétences plus affirmées en leadership. The graph examines five specific leadership characteristics: setting goals and targets (red bar), feeling comfortable when others challenge their decisions (blue bar), understanding the team's challenges (green bar), being open to suggestions from others (yellow bar), and being willing to take responsibility (gray bar). Indeed, the ability to set goals and targets is observed in 80% of hearing-impaired individuals, which demonstrates a strong ability to organize and plan to achieve specific goals. This is the most common skill. Approximately 60% of participants feel comfortable when someone challenges their decisions: this skill indicates a moderate openness to criticism and an ability to accept constructive feedback, but with room for improvement. 70% of participants demonstrate a good understanding of collective objectives and challenges, reflecting a collaborative approach. Similarly, 70% of respondents are open to suggestions from others, demonstrating an ability to integrate diverse perspectives into decision-making. The least common skill is taking responsibility, shared by 40% of participants within the team.

According to data collected from SOLIDATIC Benin managers, people with hearing impairments dislike following orders without question or holding prejudice or resentment at bay. However, they do like to help their colleagues in difficult times. This resilience suggests a preference for active engagement and participation in the decision-making process. They seem to value understanding tasks and the ability to question instructions, which indicates a certain autonomy and critical thinking. All of the hearing-impaired people who participated in the study expressed a clear ambition for entrepreneurship. This demonstrates a unanimous interest in starting a business, achieving financial independence, and managing their own businesses. They prefer this path over other options such as training or finding paid employment.

Table 3. Presentation of games program designed using the TUET method to facilitate the identification of leadership qualities among hearing-impaired individuals at SOLIDATIC Benin

			Game title	Typology	Category	Purpose	Objective/Skills sought	Duration
Order of business	Week 1	Session 1: Day 1	Bird in a cage	Playful	Symbolic	Adaptable	Cultivate the spirit of observation and speed.	90min
		Session 2: Day 2	Leaping centipedes	Educational	Symbolic	Adaptable	Learn to organize yourself as a team to carry out collective action and achieve a common goal.Work on your ability to resist unpredictable situations and demonstrate empathy towards others.	90min
	Week 2	Session3 : Day 3	Sitting volleyball	Pedagogical	Exercise rules	Adaptable	Learn to organize yourself individually and to mature your thinking to solve a given problem.	90min
		Session 4 : Day 4	Two dots / Collect Em All	Pédagogique	Exercise rules	Usable	Learn to organize yourself individually and then collectively and to mature your thinking to solve a given problem.	90min
	Week 3	Session 5 : Day 5	Sack race	Playful	Symbolic	Adaptable	Learn to move as quickly as possible without forgetting to protect yourself and your teammates.	90min
		Session 6 : Day 6	Strength of Hercules	Playful	Symbolic	Utilisable	Learn values such as courage, perseverance and empathy in a fun and interactive way.	90min
	Week 4	Session 7 : Day 7	Thief and policemen	Playful	Rules	Adaptable	Learn to self-defend with wisdom and humility without forgetting to protect yourself against any external attack.	90min
		Session 8 : Day 8	Assembly line work	Playful	Assembly	Adaptable	Work on awareness, automatisms and mental calculation in a fun way.	90min
	Week 5	Session 9 : Day 9	Ball throw	Pédagogique	Rules	Usable	Learn to be tolerant and improve accuracy of address quality.	90min
		Session 10 : Day 10	Ball in the tunnel	Pédagogique	Rules	Adaptable	Develop your skill and speed, cultivate tolerance and patience.	90min
	Week 6	Session 11 : Day 11	I build my house	Pédagogique	Assembly	Usable	Develop the spirit of creativity, the sense of observation and simulation.	90min
		Session 12 : Day 12	Adapted handball	Playful	Exercice-Règles	Adaptable	Develop mutual aid and teamwork skills.	90min

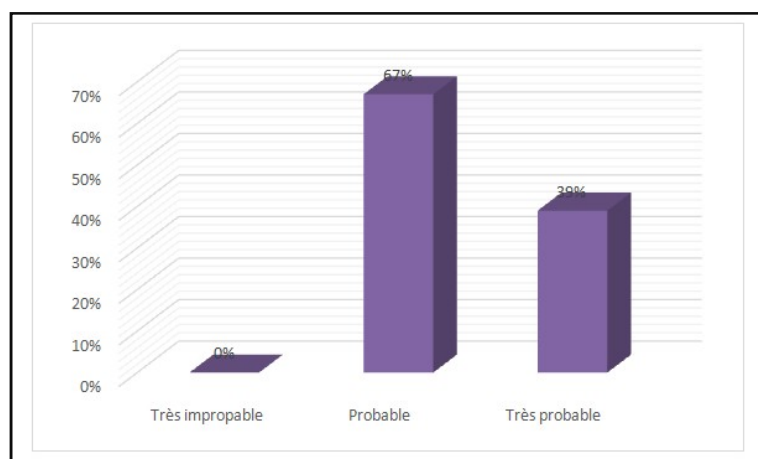
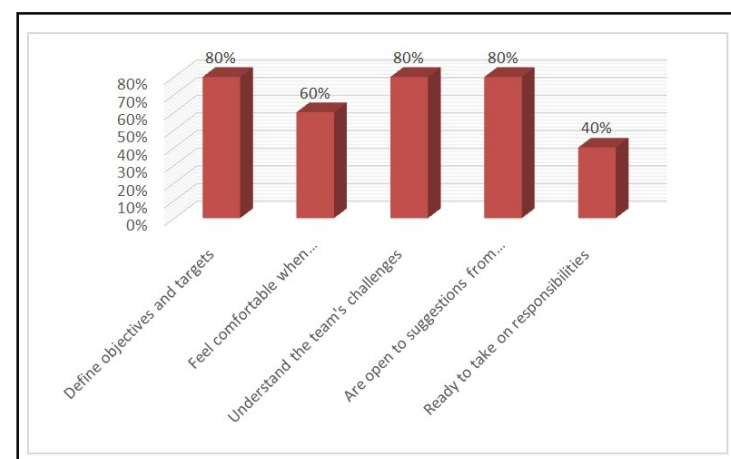
**Figure 1. Ranking of hearing-impaired people as leaders on a scale of 10****Figure 2. Leadership characteristics observed in the hearing impaired according to SOLIDATIC Benin managers**

Table 4. Personality traits of hearing-impaired individuals according to SOLIDATIC Benin managers

Characteristics observed	Rate of participants concerned
Execute commands without question	0%
Keep any prejudice or resentment at bay	0%
Helping their comrades in difficult times	100%

Source: Field survey data, 2023

Table 5. Distribution of people with hearing impairments at SOLIDATIC Benin according to their ambitions for the next 5 years

Ambitions of the hearing impaired of SOLIDATIC Benin for the next 5 years	Staff	Frequency in %
Craft training	0	0
Entrepreneurship	43	100
Education (further studies)	0	0
Job	0	0

Source: 2023 field data

Table 6. Results from interview

Structure	What characterizes a leader?	Can hearing-impaired people develop leadership skills through games? If so, how can games help develop their leadership skills?
National Federation of Disabled People	A leader is characterized by humility and willingness to serve others. A leader must have a clear vision of the mission entrusted to him.	Yes, games help to awaken leadership in deaf people, it gives them a competitive spirit, encourages them to want to do better than others, and therefore to continually improve.
International expert (Ivory Coast)	These are the following qualities that characterize a leader: problem-solving, open-mindedness, inspiration, intuition, innovation, positiveness, confidence, a good communicator, ability to delegate, trustworthiness, determination, emotional intelligence, perseverance, reliability, relationship building, strategic thinking, organization, meticulousness, humility, etc.	Yes, it is possible that they develop their leadership skills, but it will only take a little longer than others because they are people who, when they mix with others, tend to feel diminished because of their disability. But when they find themselves among themselves or when we succeed in creating a framework of trust for them, they are people who feel fulfilled. We must therefore create inclusive and especially team games to allow them to regain their self-confidence. We must also translate the explanations or instructions given into their language to allow them to reproduce the requested gestures.
Civil society 1	A leader is characterized by humility to lead his team. He must be a good example for his teammates and ensure the proper flow of information within the team.	Yes, games allow hearing-impaired people to get to grips with the basics of leadership, such as how to lead a team, and the characteristics and values to develop when in a leadership position. Games stimulate and improve their adaptability, allowing them to grasp leadership principles and easily apply them to their teams.
Civil society 1	It is the positive influence to rally to the same cause.	Yes, I think it's possible. The first thing they need to work on is confidence and assertiveness. Because if they don't accept themselves as a separate entity, it's a little harder to get them to accept others. You have to show them that their disability doesn't define them.

Table 7. Summary of post-game session activities among hearing impaired people in SOLIDATIC Benin

Activity title	Sanitation	Leisure games (football, ball throwing, Hercules strength)	Introduction to manual activities (pedicure, manicure, make-up)	Introduction to food processing (banana and grated coconut, appetizers, puffed rice and tapioca, etc.)
Objective	Make the work environment clean and accessible.	Organize to play and maintain brotherly relationships.	Equip yourself to be useful to yourself and your community.	Learn to be an entrepreneur so as not to depend on your parents.

DISCUSSION

The results of this study demonstrate various aspects of leadership development among people with hearing impairments through the use of games. A detailed analysis of each table and graph highlights several key observations.

Sample: Distribution by Organization The sample included various stakeholders: the SOLIDATIC Benin management team, people with hearing impairments, representatives of the National Federation of People with Disabilities, an international expert, and members of civil society. This demonstrates a diversity of opinions and skills used to assess leadership among people with hearing impairments.

This enriched our understanding of the factors influencing their development. This diversity of stakeholders involved in this study corroborates the findings of Day, Fleenor, Atwater, Sturm, and McKee (2014), who address the development of leadership skills by taking into account the environment and individual characteristics, a useful approach for exploring the factors influencing leadership among people with disabilities.

Characteristics of the survey population: The majority of participants in this play program were young boys (62.79% male), and the dominant age was between 5 and 15 years old (95% of participants). Gender and age differences influenced the results in terms of leadership skills, since the demographic distribution was not equal. The relatively young age of the participants (mainly in first and

second grades) means that these children are at a stage of development where leadership skills are still being formed. These results corroborate the work of Eagly and Carli, which examines how gender differences influence leadership development (Eagly and Carli, 2007). Although leadership development focuses on adults, the work of these two authors highlights biases that often begin in childhood and can be present even in play activities. In other words, gender influences leadership development regardless of the individual's life stage, especially during childhood. Furthermore, Kolb and Williams' work on gender-influenced leadership styles, while applied to adults, can also be extended to how young boys and girls begin to interact and develop their leadership abilities (Kolb and Williams, 2001). This influence of gender and age was noted during the leadership skills development game sessions for the hearing impaired at SOLIDATIC Benin.

Leadership skills: Development The table shows a significant improvement in leadership skills after the gaming intervention. Skills such as motivation, self-control, communication, decision-making, and collaboration have very low p-values, all below 0.05, indicating a statistically significant difference. This suggests a clear positive impact of the games on the development of leadership skills, reinforcing the hypothesis that these playful activities are beneficial for people with hearing loss. In other words, the study found a positive impact of interactive games on the development of leadership skills among people with hearing loss in SOLIDATIC Benin. The results show significant improvements in several key areas, including motivation, self-control, communication, decision-making, and collaboration. All p-values are extremely low (well below 0.05), indicating that the differences observed between skills before and after the intervention are statistically significant. This suggests that the intervention (here, the games) had a positive impact on the development of these leadership skills. The research hypothesis posited that the use of interactive games would promote the development of leadership skills among the hearing impaired in SOLIDATIC Benin by improving their communication, collaboration, and self-confidence. The results obtained confirm this hypothesis. Interactive games helped develop an environment conducive to practicing skills such as decision-making and collaboration, both of which showed significant improvements after the intervention. These results corroborate the work carried out by Day and Dragoni on the one hand and those of Kouzes and Posner on the other. Indeed, Day and Dragoni state that the development of leadership skills, such as decision-making and motivation, can be enhanced through structured interventions such as group activities or games (Day and Dragoni, 2015). Our results show a similar effect, with significant gains after the game-based intervention. Kouzes and Posner, on the other hand, identify key leadership skills, such as communication and collaboration, that develop in interactive and collaborative learning environments (Kouzes and Posner, 2017). Their theoretical framework supports the idea that games promote self-confidence and motivation, essential elements in the development of leaders. Furthermore, Lieberman, Stuart, Hand, and Robinson explored the role of recreational activities for people with visual and hearing impairments in Physical Education and Activity for Students with Visual Impairments (Lieberman, Stuart, Hand, and Robinson, 2006). They show that interactive games can have a positive impact on self-confidence, communication, and motivation, which is consistent with the results of our study.

Games Program: Based on the TUET Method While the games program is structured over six weeks with clear objectives for each activity, the games are both playful and educational, aiming to develop specific skills such as communication, cooperation, reflection, and physical and mental endurance. Each game is designed to strengthen different aspects of leadership, ranging from team collaboration to individual decision-making. Games such as "Hopping Centipede," Adapted Handball, and "Sitting Volleyball" facilitated collaboration and communication among participants. Indeed, the "Hopping Centipede" activity, for example, allowed participants to learn how to organize themselves as a team to achieve a common goal, which strengthened their team spirit and their ability to collaborate effectively. These results align with David Kolb's experiential learning theory. According to Kolb, skill development occurs through a learning

cycle that includes concrete experience, reflection, abstract conceptualization, and active experimentation. In this study, games provided the concrete experience, allowing participants to actively engage in situations that required reflection, planning, and collaboration. The observed results, such as improved decision-making (p-value < 0.005), demonstrate that participants were able to leverage these experiences to develop new skills. These results are consistent with the work of Piaget (1936), Vygotsky (1978), Kirk and Macdonald (1998), and Sherrill (1998). Piaget maintains that play promotes active learning and the development of social skills in children (Piaget, 1936). His theory of cognitive development shows that games, particularly collaborative games like "Hopping Centipedes," stimulate thinking and cooperation. This approach allows children to understand the concept of teamwork while strengthening their sense of cohesion. In his work, Vygotsky proposes that play allows children to test social interactions and develop skills such as communication (Vygotsky, 1978). His "zone of proximal development" justifies the usefulness of these games for children, as they are encouraged to go beyond their current skill level by collaborating with their peers. In their research on physical education, Kirk and Macdonald demonstrated how physical activities, when structured pedagogically, can strengthen non-physical skills such as decision-making, communication, and mental endurance (Kirk & Macdonald, 1998). This is consistent with the results we have observed with games such as Adapted Handball and Sitting Volleyball.

Finally, in Adapted Physical Activity, Recreation and Sport, Sherrill discusses the importance of adapted physical activities for the social and personal development of people with disabilities (Sherrill, 1998). This perspective confirms the relevance of our choice of activities such as Adapted Handball, which promotes collaboration while allowing the hearing impaired to engage in a sporting context. Priest and Gass also contribute to the above-mentioned authors. In Effective Leadership in Adventure Programming, Priest and Gass show how adventure and team games allow participants to develop leadership skills (Priest and Gass, 2005). They explain that activities such as "Hopping Centipedes," which require team coordination, encourage participants to make decisions and solve problems together.

Observed leadership: Characteristics People with hearing impairments stand out for their ability to set clear goals (80%) and understand team issues (70%). They are also open to suggestions from others (70%), but show weaknesses in taking responsibility (40%) and handling criticism (60%). This suggests that while they show clear potential in collaborative leadership, certain key skills still need strengthening, including accepting responsibility and being open to challenge. These findings corroborate the work of Hackman and Wageman (2005); Kouzes and Posner (2017); and Northouse (2018). In their study on team dynamics, Hackman and Wageman emphasize the importance of setting clear goals for team success (Hackman and Wageman, 2005). Our results indicate that 80% of hearing-impaired people are able to do this, which is a strong point for their leadership potential. This could also be linked to learning methods that encourage clarity and task structure. Kouzes and Posner also emphasize that effective leaders are those who listen to others and integrate their contributions (Kouzes & Posner, 2017). This may reinforce the idea that developing interpersonal and collaboration skills could help people with hearing loss improve their leadership. In Leadership: Theory and Practice, Northouse addresses the challenges many leaders face, including taking responsibility and handling criticism (Northouse, 2018). Our results show that 40% of participants lacked responsibility and 60% lacked comfort with criticism, which may indicate an opportunity for development. Training programs on error management and feedback could be beneficial in overcoming these shortcomings.

Personality traits: People with hearing impairments do not like to follow orders without question or harbor biases, which suggests a strong desire for independence and critical thinking. However, they are very supportive and willing to help their peers, a quality essential for collaborative leadership. These findings are consistent with the work of Rogers. In On Becoming a Person, Carl Rogers emphasizes

the importance of autonomy and the ability to ask questions in personal development (Rogers, 1961). The tendency of people with hearing impairments not to follow orders without question reflects a desire for independence and critical engagement, essential elements for leaders capable of making informed decisions and challenging the status quo. Furthermore, Northouse highlights the role of altruism in leadership (Northouse, 2018). The willingness of hearing-impaired individuals to help their peers reflects a collaborative approach that can strengthen team dynamics and foster a mutually supportive environment. Finally, Zaccaro demonstrates that certain qualities, such as independence and the ability to work in a team, are strongly correlated with leadership effectiveness (Zaccaro, 2007). The traits observed in hearing-impaired individuals may therefore make them suitable for becoming effective leaders in collaborative settings.

Distribution of ambitions for the next five years: All participants expressed an interest in entrepreneurship, reflecting a strong ambition to become independent and create their own opportunities. This choice is consistent with the leadership skills, such as initiative and decision-making, developed through games. These results are consistent with the work of Kourilsky and Walstad. In their study on entrepreneurship education, they emphasize that young people who express an interest in entrepreneurship tend to have a strong sense of initiative and a desire for autonomy (Kourilsky and Walstad, 1998). The common interest in entrepreneurship among hearing-impaired people observed in our results indicates an aspiration to take control of their future and create their own opportunities.

Interview summary: The interviews revealed that games help people with hearing loss develop several essential leadership qualities, such as problem-solving, self-confidence, empathy, and the ability to motivate others. Inclusive and cooperative games are highlighted as particularly effective in strengthening these skills, particularly by creating an environment where people with hearing loss feel more comfortable and fulfilled.

Post-game session activities: Complementary activities such as sanitation, recreational games, and practical skills training (pedicures, food processing) appear to have strengthened participants' team spirit, creativity, and autonomy, complementing the skills acquired through the games. These results corroborate the work of Csikszentmihalyi. In *Creativity: Flow and the Psychology of Discovery and Invention*, he emphasizes the importance of active engagement in varied tasks to foster creativity (Csikszentmihalyi, 1996). Complementary activities performed by hearing-impaired individuals can therefore serve as catalysts for innovation and self-expression, contributing to their holistic development. In conclusion, the results show a positive impact of games on leadership development among hearing impaired people, with visible progress in key skills such as communication, collaboration, and decision-making. However, areas for improvement remain, particularly with regard to accepting responsibility and handling criticism. These results appear to corroborate the initial hypothesis and highlight the effectiveness of the game-based learning method for this group of participants. Hearing impaired people have demonstrated an ability to project themselves into leadership roles when provided with appropriate support. This also aligns with Moores' work, which stipulates that those inclusive and supportive environments are essential for the development of skills in people with disabilities (Moores, 2001).

The results of this study have important practical implications for educators and professionals working with people with hearing impairments. By integrating interactive games into educational and personal development programs, it is possible to strengthen key skills such as self-confidence, communication, and initiative-taking. For example, the game *Hercules' Strength*, which emphasizes values such as courage and perseverance, helped improve participants' self-control, increasing from $M = 0.19$ before the intervention to $M = 0.70$ after. Games can also be used to raise awareness about the ability of hearing-impaired people to assume leadership roles. Results show that participants felt more empowered to take on responsibilities after participating in the games, indicating a stronger sense of competence. However, despite the promising results, the study has certain

limitations. First, the sample size (43 participants) limits the generalizability of the results to the entire hearing-impaired population in Benin. Furthermore, the lack of control groups and long-term follow-up makes it difficult to assess the sustainability of the skills acquired. Another limitation concerns the communication difficulties encountered during the game sessions, due to the occasional unavailability of a sign language interpreter. This may have affected the engagement of some participants, leading to variations in the results. Future research could focus on using games adapted for other types of disabilities to assess their impact on leadership skill development. Furthermore, it would be interesting to explore the long-term effects of interactive games on leadership through a longitudinal study. Finally, it would be worth testing more complex games that engage participants more deeply in leadership roles, such as business simulation games or project management role-playing games. This study confirms that interactive games are an effective way to develop leadership skills in people with hearing impairments. They provide a stimulating learning environment, based on practice and experimentation, which helps overcome certain communication barriers and promote greater social inclusion. These results call for greater integration of games into personal development programs for people with disabilities in Benin and elsewhere. Interactive games have thus demonstrated their potential to transform the learning experience of people with hearing impairments by offering them unique opportunities to discover themselves as leaders. Educational programs should further integrate these tools to contribute to the empowerment of this population, and future research can explore new avenues to maximize their impact.

CONCLUSION

This study, entitled "Leadership Development in Hearing Impaired People through Games: A Case Study at SOLIDATIC Benin," explored the impact of interactive games on the development of leadership skills among people with hearing impairments at SOLIDATIC Benin. The main objective was to assess how game-based experiences could foster essential skills such as communication, collaboration, and self-confidence, based on David Kolb's experiential learning theory. People with hearing impairments often face significant challenges in social and professional integration. Communication difficulties, stereotypes, and social isolation contribute to hindering their personal development and their ability to assume leadership roles. The Beninese context, marked by limited access to personal development programs for people with disabilities, justifies the importance of initiating inclusive approaches, such as the use of interactive games. The problem of this research aimed to determine how games could influence the development of leadership in this marginalized population. The results revealed that interactive games had a positive impact on the development of participants' leadership skills. After the intervention, significant improvements were observed in areas such as motivation, self-control, communication, decision-making, and collaboration. For example, the test conducted revealed that for each of the leadership skills assessed—motivation, self-control, communication, decision-making, and collaboration—the p -value was less than 0.05 before and after the intervention. This means that a significant improvement in each of these parameters was observed. These results confirm the initial hypothesis, namely that the use of interactive games promotes the development of leadership skills among the hearing-impaired participants of SOLIDATIC Benin. It is therefore appropriate to affirm that games constitute an effective means capable of developing a better sense of decision-making, group management, personal initiative, communication, collaboration and self-confidence through different playful activities, in accordance with Kolb's experiential learning cycle. The results of this study make a significant contribution to the understanding of experiential learning as applied to people with disabilities. Theoretically, this study confirms that games can serve as a catalyst for the development of leadership skills, enabling active participation and reflection on lived experiences. Practically, it proposes an intervention framework that can be used by special educators, trainers, and NGOs to strengthen the leadership skills of people with hearing impairments through playful

approaches. This study was conducted in a specific context, that of SOLIDATIC Benin, with a limited sample of 43 participants. The results cannot therefore be generalized to all hearing-impaired people in Benin. In addition, certain methodological limitations such as the absence of a control group and communication difficulties due to the unavailability of sign language interpreters may have influenced the results obtained. Future research could focus on evaluating the long-term effectiveness of interactive games and include longitudinal follow-up of participants. It would also be interesting to adapt these games to other types of disabilities, as well as to explore the impact of digital games or virtual reality simulation games on the development of leadership skills.

REFERENCES

- Cox, R. (2007). *Developing self-esteem through group activities: The role of games in building confidence and leadership*. *Journal of Play and Learning*, 4(2), 45-58.
- Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. Harper Collins.
- Day, D. V., Fleenor, J. W., Atwater, L. E., Sturm, R. E., et McKee, R. A. (2014). Advances in leader and leadership development: A review of 25 years of research and theory. *The Leadership Quarterly*, 25(1), 63-82. <https://doi.org/10.1016/j.leaqua.2013.11.004>
- Day, D. V., & Dragoni, L. (2015). Leadership development: An outcome-oriented review based on time and levels of analyses. *Annual Review of Organizational Psychology and Organizational Behavior*, 2, 133-156. <https://doi.org/10.1146/annurev-orgpsych-032414-111328>
- Eagly, A. H., & Carli, L. L. (2007). *Through the labyrinth: The truth about how women become leaders*. Harvard Business School Press.
- Eby, L. T., Allen, T. D., Evans, S. C., Ng, T. W., & DuBois, D. L. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior*, 72(2), 254-267. <https://doi.org/10.1016/j.jvb.2007.04.005>
- Eys, M. A., Loughhead, T. M., & Carron, A. V. (2013). *Group dynamics in sport*. In *Handbook of sport psychology* (pp. 102-121). Wiley
- Empan. (2003). *Sport et intégration*. Empan, 51, 1-160. <https://www.editions-eres.com/ouvrage/1259/sport-et-integration>
- Fenneteau, H. (2015). *L'enquête : entretien et questionnaire*. Dunod. Université de Lorraine. Repéré à : <https://www.dunod.com>
- France Assos Santé. (2019). *Les bénéfices des jeux pour les personnes déficientes auditives*. Consulté à l'adresse <https://www.france-assos-sante.org>.
- Hackman, J. R., & Wageman, R. (2005). Elevating the science of teamwork. *The Journal of Applied Behavioral Science*, 41(3), 309-328. <https://doi.org/10.1177/0021886305281364>
- Hager, P., & Hall, D. (2004). *Developing leadership capability: What's inside the black box?* *Journal of Educational Administration*, 42(6), 669-684. <https://doi.org/10.1108/09578230410568971>
- Harris, S. (2007). *Fostering leadership skills through inclusive education for individuals with hearing impairment*. *Journal of Special Education Leadership*, 20(1), 23-30.
- Kirk, D., & Macdonald, D. (1998). Physical education in primary schools: A focus on the future. *The Sport Educator*, 53(1), 26-34.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
- Kolb, D. M., & Williams, J. (2001). Breakthrough bargaining. *Harvard Business Review*, 79(2), 89-97.
- Kouzes, J. M., et Posner, B. Z. (2017). *The leadership challenge: How to make extraordinary things happen in organizations* (6th ed.). Jossey-Bass.
- Liebman, L. J., Stuart, M. E., Hand, K., & Robinson, B. (2006). *Physical education and activity for students with visual impairments*. American Printing House for the Blind.
- Lu, X., Smith, L., & Hsieh, P.-C. (2016). *The leadership potential of individuals with hearing impairments: A study on the impact of support and opportunities*. *International Journal of Disability, Development and Education*, 63(3), 275-290. <https://doi.org/10.1080/1034912X.2016.1159503>
- Moore, D. F. (2001). *Educating the deaf: Psychology, principles, and practices*. Houghton Mifflin.
- Northouse, P. G. (2018). *Leadership: Theory and practice* (8e éd.). Sage Publications.
- Northouse, P. G. (2007). *Leadership Theory and Practice*, (4e éd.). Thousand Oaks, Sage Publications.
- Piaget, J. (1945). *The formation of the symbol in children: Imitation, play and dream, image and representation*. Delachaux and Niestlé. (Reissued in 1994).
- Piaget, J. (1936). *The Birth of Intelligence in Children*. Delachaux et Niestlé.
- Reichhart, F. (2007). Outdoor physical and sporting activities: what accessibility for people with disabilities? *Nature and recreation*, 4, 15-20.
- Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. Houghton Mifflin.
- Sherrill, C. (1998). *Adapted physical activity, recreation, and sport: Cross-disciplinary and lifespan*. McGraw-Hill.
- Smith, K., et Hsieh, P.-C. (2017). Sports participation and re-integration of persons with spinal cord injury. *Therapeutic Recreation Journal*, 51(1), 75-80.
- Smith, R. E., & Smoll, F. L. (2007). *Leadership in youth sports: A social cognitive approach*. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 367-389). Wiley.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Weiss, M. R. (2008). *The role of sport in personal and social development*. In *Advances in sport psychology* (pp. 34-56). Human Kinetics.
- Zaccaro, S. J. (2007). Trait-based approaches to studying leadership. *American Psychologist*, 62(1), 6-16. <https://doi.org/10.1037/0003-066X.62.1.6>
