FROM EXCLUSION TO ENGAGEMENT: HOW TGFU TRANSFORMS MOTIVATION AND INCLUSION FOR OVERWEIGHT STUDENTS IN PHYSICAL EDUCATION

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ABSTRACT

Being overweight is a growing global concern, often leading to exclusion from physical education (PE) due to stigmatization and inadequate teaching methods. This study examines the potential of the Teaching Games for Understanding (TGfU) approach for overweight students in physical education by addressing their psychological, social, physical, and cognitive needs. The study was conducted with final-year high school students, using semi-structured interviews and teacher feedback to assess the impact of TGfU. Results indicate that TGfU positively influenced student motivation, social connections, and motor skills development. Teachers reported challenges with transitioning from traditional methodologies but noted improved engagement and cooperation among overweight students. The findings suggest that TGfU fosters a supportive learning environment to the inclusion of overweight students, though its long-term effects on active lifestyles warrant further exploration.

INTRODUCTION

Teaching Games for Understanding (TGfU) is a pedagogical framework that transforms physical education by shifting the focus from technical skill acquisition to the holistic development of tactical understanding, decision-making, and teamwork. Rooted in constructivist and socio-constructivist theories, TGfU empowers learners to actively engage in modified games, emphasizing problem-solving and reflective practices to foster deep learning (Bunker & Thorpe, 1982). This student-centered approach positions learners as active participants in their educational journey, promoting intrinsic motivation and critical thinking.

Extensive empirical evidence supports the efficacy of the Teaching Games for Understanding (TGfU) model in improving motivation, cognitive engagement, and motor skills. Research has demonstrated its capacity to enhance teamwork and strategic thinking, contributing to both physical performance and psychological well-being (Gil-Arias et al., 2020; Hernando Garijo & Hortigüela Alcalá, 2017). TGfU's adaptability makes it particularly effective in inclusive classroom settings, where collaboration is prioritized over competition (Gaspar et al., 2021). By emphasizing game-based learning, TGfU fosters intrinsic enjoyment and engagement, catering to the diverse needs of learners.

Given these attributes, TGfU appears to be an ideal pedagogy for promoting physical literacy among students. According to the International sport and culture association (Payne, 2021), "Physical literacy is the skills and attributes individuals demonstrate through physical activity and movement across their life course. It can be understood as a process and as an outcome that individuals pursue through an interaction of their physical, emotional, social, and cognitive learning". Physical literacy spans multiple domains: the physical domain, which includes motor skills and fitness; the cognitive domain, encompassing knowledge and decision-making related to physical activity; the psychological domain, focusing on confidence and motivation; and the social domain, addressing teamwork and collaboration (Payne, 2021). The integration of these dimensions highlights the complexity of physical literacy and its critical role in fostering lifelong participation in physical activity.

For children with special needs, including those facing physical, social, or cognitive barriers, TGfU offers significant benefits. For example, overweight students often experience stigmatization and reduced participation in traditional physical education settings (Aydi et al., 2023; Doolittle & Rukavina, 2016). The TGfU model helps to mitigate these barriers by implementing inclusive practices that create a supportive environment, and promote confidence, skill acquisition, and social integration. Furthermore, TGfU facilitates the development of interpersonal skills, enabling students with cognitive or emotional challenges to engage effectively in teamwork and decision-making (Chiva-Bartoll et al., 2018).

Carl et al. (2024) highlighted the inherent challenges of designing learning environments that effectively develop physical literacy among all children. However, the collaborative approach offered by the TGfU model provides an inclusive framework that can accommodate all children, including those with weight-related challenges. In this sense, TGfU may play a pivotal role in fostering lifelong engagement with physical activity by promoting physical literacy.

Despite its advantages, TGfU is not without limitations. The framework requires substantial preparation and pedagogical expertise, which can pose challenges for educators unfamiliar with its methodology (Diaz-Cueto et al., 2010). Additionally, the reliance on student-driven discovery may result in slower skill acquisition for some learners, particularly in time-constrained educational settings (Arias-Estero et al., 2020). Addressing these limitations through targeted teacher training and contextual adaptation is critical to maximizing TGfU's potential.

This study seeks to explore how TGfU promotes the inclusion of overweight students in physical education by helping them to develop their physical literacy holistically. By examining its psychological, social, physical, and cognitive domains, this research aims to contribute to the growing body of evidence supporting TGfU as an inclusive and effective pedagogical tool.

METHODS

This study employed a qualitative approach to explore the impact of the Teaching Games for Understanding (TGfU) framework on the inclusion of overweight students in physical education (PE). The study focused on assessing psychological, social, physical, and cognitive dimensions through structured data collection tools.

POPULATION

The participants were 35 final year high school students (aged 17 to 19, in their final class of high school) from a general and technological high school in Strasbourg, France. We collected weight, age, height, and gender from the students, and calculated their BMI. Referring to the World Health Organisation standards, this mix-gender class included six students classified as overweight by body mass index (BMI) standards. The participants had a range of physical and social abilities, some with experience of team sports and others with motor difficulties. Participation was voluntary, and informed consent was obtained from the students, their guardians, the teacher, and the school. Anonymity was maintained throughout the study to protect the students.

PROCEDURES

The intervention was spread over eight physical education lessons between March and May 2024, with one two-hour lesson per week. The lessons focused on handball and implemented the TGfU framework. They were structured using a game-exercise-game format, with an emphasis on modified games to promote tactical understanding, decision-making, and collaboration. Overweight students were observed for their levels of inclusion and engagement in relation to their peers. The teacher followed TGfU pedagogical principles, incorporating reflective questioning and creating a supportive learning environment.

TOOLS AND INSTRUMENTS

Semi-Structured Interviews: After the intervention, nine students (five of whom were overweight and one severely obese) took part in semi-structured interviews. The 12- to 20-minute interviews, which were voluntary, took place in a quiet, secluded area at the end of the lesson so that fellow students could not overhear. These interviews explored their subjective experiences of TGfU, focusing on their perceptions of inclusion, motivation, and skills development.

Teacher Interview: The PE teacher who implemented the TGfU framework was interviewed at the end of the sequence to gather information on the perceived effectiveness of the methodology, the challenges and the impact on student engagement. The interview with the teacher lasted 20 min and was based on an interview guide that explored the following themes: benefits and difficulties experienced, and the consequences of teaching TGfU.

Classroom Observations: Observational data was collected during each lesson, documenting student interactions, engagement, and participation levels to triangulate findings from the other data sources.

QUALITATIVE METHODS

This study is a qualitative type of research, since its aim is to describe, explore and understand a phenomenon rather than to measure it (quantitative type). As Poisson (1983) points out, the aim is to “grasp reality as it is experienced by the subjects” and to “understand reality by trying to penetrate the observed universe” (p. 371). As Paillé and Mucchielli (2012) state, in the case of qualitative research, the tools used are designed to collect qualitative data such as testimonies, videos, or field notes. This is indeed the case here, as the main investigator gathered testimonies from students during semi-structured interviews. These interviews helped to gather the students' personal opinions and feelings. This data is therefore subjective and must be analyzed individually. However, Descamps et al (2013) point out a limitation to interviews when they say that “any testimony gives a necessarily subjective, partial or even biased view of reality”. Each person tells a story, a personal vision that corresponds to their truth. Moreover, this study is of the

comprehensive type according to Marshall and Rossman (2006), as it aims to document the phenomenon of differentiation in physical education in order to improve the inclusion of overweight and obese students

We transcribed and analysed students' interviews using thematic coding (Paillé and Mucchielli, 2012). The interviews make it possible to analyse the inclusion of overweight students following a sequence with this pedagogy, and to draw out the benefits and disadvantages.

The results were analysed using the Gaudreau method, "the most widely used in educational research: content analysis" (Gaudreau, 2011). This consists of producing research results by "inductive reasoning, i.e. by extracting and interpreting the data identified in a corpus with a view to producing more abstract overall results, or even theories". In this study, the corpus is a full transcript of interviews with student respondents, recorded using a voice recorder. The analysis is in two parts: vertical and transversal. The vertical analysis "consists of analysing the comments at an individual level, each verbatim being analysed in turn, in isolation from the others" (Gaudreau, 2011). Initially, this vertical analysis of a single transcript begins by dividing the respondent's comments into "units of analysis" to separate their ideas. Once this has been done, it is possible to record the general ideas that emerge. The transversal analysis is an "analysis at the collective level involving all the verbatims previously analysed at the individual level" (Gaudreau, 2011). The idea is to bring together statements that seem related, by identifying each group by a theme inspired by the grouped statements. This analysis therefore brings together nine students' interviews, but also analyse the teacher's opinion of the TGfU pedagogy using a vertical method. We then compare the teacher's point of view with that of the students concerning the TGfU sequence, its benefits and its disadvantages.

ETHICS

Before starting, we informed the head teacher of our study and our interviews, in order to obtain an agreement in principle. Once this had been given, the PE teacher informed his students about the study, and gave them information about the TGfU, how it worked and how the sequence would be organised.

Then, the presence of the main investigator during the TGfU handball lessons enabled her to become familiar with the students and establish an initial bond by helping, advising, and asking them questions throughout the sequence. Co-constructing the sequence with the PE teacher also contributed to building mutual trust.

Finally, this confidence-building process was reinforced by the location of the interviews, in a corridor or changing room, away from the other students. We insisted on the anonymity of the students in order to acclimatise them and allow them to speak freely, without judgement.

RÉSULTATS

The study investigated the effectiveness of the Teaching Games for Understanding (TGfU) framework in promoting the inclusion of overweight students in physical education (PE). Findings are organized into four dimensions: psychological, social, physical, and cognitive, as outlined in the methodology.

PSYCHOLOGICAL DOMAIN

Overweight students reported increased motivation and a greater sense of belonging during the TGfU intervention. Students attributed their increased engagement to the playful and reflective nature of TGfU activities, which reduced their fear of judgement and enhanced enjoyment. One overweight boy (interview 3) noted that the 'playfulness allows me to give more of myself'. At the same time, an overweight girl (interview 5) said that the TGfU format allowed her to 'have a laugh with my girlfriends', which motivated her more to practice.

SOCIAL DOMAIN

The TGfU framework fostered stronger peer interactions and collaboration. Interviews revealed that students, particularly those who were overweight, experienced reduced stigmatization and increased positive exchanges with peers. Observational data corroborated these findings, showing more frequent supportive communication during game scenarios. An overweight student participant (interview 5) stated, "I used to feel left out, but now my classmates pass the ball to me and encourage me" . However, one participant with obesity (interview 2) was the only student who did not express her opinion and allowed other group members to decide for her.

PHYSICAL DOMAIN

Students interviewed suggested that physical engagement and motor skill development improved over the course of the intervention. This was corroborated by observations in fine motor skills, such as catching and passing, particularly among overweight students. In particular, one pupil (interview 1) who had initially avoided taking an active part, said that she was proud of her new ability to perform these gestures during the games, and in particular of her "running endurance". Another overweight student (interview 5) expressed his impression that he had made progress in handball in terms of the precision of his movements.

COGNITIVE DOMAIN

The students demonstrated a better understanding of game strategies and decision-making. The interviews highlighted improved knowledge of handball rules, tactical awareness, and making quick time decisions. The cognitive improvements were attributed to the reflective questioning used in the TGfU lessons, which encouraged the students to think critically about their actions.

One overweight boy (interview 8) explained that the questioning helped him to understand how certain game strategies worked by 'opening up the field of thought', while one girl (interview 1) said that repetition helped to integrate new knowledge.

OVERALL INCLUSION

All the overweight participants reported feeling more integrated into physical education after the TGfU intervention. The observations and interviews showed a shift from integration (adaptation to the task) to genuine inclusion (tasks adapted to their needs). The students attributed this to TGfU, being a 'more complete' form of teaching (interview 3) with psychological, social, cognitive and motor dimensions. This can also be explained by the alternation between play and questioning phases where the teacher 'explains several elements' (interview 5).

TEACHER'S OPINION ON TGFU

The teacher who set up the TGfU has 34 years' experience and is in charge of a football (soccer) sports section. He is therefore a specialist in team sports. He finds that the TGfU teaching method encourages students to get involved, who are more motivated and committed during lessons with 'active students' (interview with the teacher), particularly because of the playful nature of the activities. However, he found it difficult to adapt his traditional teaching methods to this TGfU approach, particularly the structure of the lesson and the questioning aspect. He also expressed concerns about not sufficiently adapting the lessons to the needs of the students.

With regard to the four dimensions of TGfU, the teacher observed several benefits:

- Psychologically: the students are more motivated and active thanks to the games and the decisions they make
- Motor skills: the teacher notes progress in the students' motor skills, as the exercises are based on real game situations.
- On a social level: the students interact more efficiently, cooperate and discuss more to succeed together.
- Cognitively: students make better decisions and master game strategies better.

The teacher also notes that overweight students participate actively and are viewed positively by their peers. This approach allows them to be fully included in the physical activities, boosting their self-confidence and facilitating their integration. In his opinion, the TGfU pedagogy is beneficial for the inclusion of overweight students, as it improves their commitment and skills.

Finally, the teacher sees potential for the TGfU pedagogy to be applied beyond team sports, particularly in individual sports such as badminton or table tennis, and even in athletics. He is also considering using it in the sports section or sports club that he coaches.

DISCUSSION

This study explored the effectiveness of the Teaching Games for Understanding (TGfU) framework in promoting physical literacy in an effective inclusive environment for overweight students in physical education (PE). The findings revealed significant improvements across psychological, social, physical, and cognitive domains. Overweight students reported enhanced motivation, a sense of belonging, stronger peer relationships, progress in motor skills, and increased tactical and strategic knowledge, all contributing to a more inclusive PE experience.

COMPARISON WITH EXISTING LITERATURE

Our results corroborate those of Aydi et al (2023) on the physical difficulties of overweight students and those of Rukavina et al (2016) on the negative interaction towards overweight students, which leads them to reject PE and physical activities. According to our study, overweight students are mainly motivated by the social aspect, which is very present in PE lessons designed with TGfU. However, if the primary motivating factor is absent or negative, then students find it difficult to get involved in PE.

The results align with prior research on TGfU's ability to enhance motivation and engagement in PE. Studies by Gil-Arias et al. (2020) and Hortigüela Alcalá and Hernando Garijo (2017) demonstrated that TGfU's game-based and reflective pedagogy satisfies students' intrinsic motivational needs and fosters enjoyment, which was confirmed by the increased intrinsic motivation observed in this study. The improved social interactions, particularly the reduction of stigmatization and the development of peer support, echoes findings by Chiva-Bartoll et al. (2018) and Koekoek and Knoppers (2015), who highlighted TGfU's capacity to build positive social climates.

An original finding was the significant cognitive improvement in overweight students, particularly in decision making and tactical awareness. While previous studies have demonstrated cognitive gains in general student populations (Arias-Estero et al., 2020), the magnitude of the improvement in overweight students was greater than anticipated in the declaration of the participants. This may be attributed to the TGfU's emphasis on reflective questioning, which may be particularly beneficial for students with limited physical experience due to motor difficulties. However, the slower progress in motor skill performance in severely overweight participants compared to their peers warrants further investigation. It is possible that physical limitations influenced their ability to reap the full motor benefits of TGfU, as suggested by Rukavina and Doolittle (2016).

However, only the obese student studied dared not give her opinion to the group and let her classmates decide for her. We might wonder whether she feels legitimate in putting forward her ideas. How does she feel about other people's opinions? How can she think that all the students are included if she doesn't dare give her opinion? We might wonder about the difference in inclusion between overweight and obese students.

However, thanks to the various TGfU components, the majority of the students in our study felt more included in PE. In fact, the four types of inclusion - psychological, physical, social and psychic - ensure that the overweight students studied are fully taken into account. This appreciation of their needs makes it possible to develop a certain well-being in PE.

The teacher appreciates the TGfU pedagogy, which enriches PE teaching through an innovative structure (game-exercise-game). He has seen progress in the students' engagement, cooperation and inclusion, including those who are overweight. This approach fosters their confidence and integration into the class. Despite initial fears linked to the change in methods and a heavier workload, he acknowledges the effectiveness of the model. As in the study by Papagiannopoulos et al (2023), these challenges do not hinder its adoption, and this teacher plans to extend its use to other sporting activities.

The teacher's opinion of the TGfU pedagogy is in line with that of the students. The games and active participation increase their motivation, while the caring atmosphere encourages motor progress without fear of judgement. Socially, exchanges and cooperation are strengthened, facilitating inclusion. Cognitively, students develop a better understanding of the rules and strategies of the game. Overall, TGfU promotes commitment, learning and inclusion in PE, including for overweight students.

ADDRESSING THE RESEARCH QUESTION

The results strongly support the hypothesis that TGfU helps to develop every area of physical literacy. Its collaborative design promotes the inclusion of overweight students in physical education by addressing their unique psychological, social, physical and cognitive needs. The strength of the study lies in its qualitative and comprehensive approach, which triangulates data from pupil and teacher interviews and observations, providing a robust and nuanced understanding of the impact of TGfU.

LIMITATIONS

Despite its strengths, the study has several limitations. First, the small sample size, particularly the limited number of overweight participants, restricts the generalizability of the findings. Second, the intervention was limited to eight PE lessons, which may not have been sufficient to observe long-term effects or sustained behavioral changes. Third, the reliance on self-reported measures introduces the potential for bias, particularly in subjective areas such as motivation and inclusion.

Finally, the absence of quantitative data limits the ability to claim definitive statistical significance for the observed improvements.

FUTURE PERSPECTIVES

Future research should expand the scope of TGfU interventions to include larger and more diverse student populations, allowing for a more comprehensive understanding of its effects on inclusion. Quantitative data to provide empirical evidence for the observation should be collected in further studies. Longitudinal studies could investigate the sustainability of the observed benefits and explore whether repeated exposure to TGfU influences long-term attitudes toward PE and physical activity. Additionally, future work should focus on tailoring TGfU to address the unique motor challenges faced by severely overweight students, potentially integrating complementary motor skill development exercises. Finally, incorporating more robust statistical analyses will strengthen the evidence base for TGfU's cognitive and motor benefits.

CONCLUSION

This study demonstrates that the Teaching Games for Understanding (TGfU) framework offers a promising pedagogical approach for fostering the holistic inclusion and physical literacy development of overweight students in physical education. By prioritizing tactical understanding, decision-making, and collaboration through game-based learning, TGfU effectively addresses the psychological, social, physical, and cognitive needs that are often overlooked in traditional PE settings. The observed enhancements in student motivation, social interactions, motor skill refinement, and particularly, the significant cognitive gains in strategic thinking, underscore TGfU's unique capacity to create a supportive and engaging learning environment for this vulnerable population.

While the current findings, derived from a qualitative case study, align with existing research on TGfU's general benefits, they specifically highlight its potential as a powerful tool for promoting genuine inclusion rather than mere integration. Future research should build upon these insights through larger-scale, quantitative, and longitudinal studies to confirm the sustainability and generalizability of these positive effects. Additionally, further exploration into adapting TGfU for students with more pronounced physical challenges could further strengthen its role in developing comprehensive physical literacy across diverse student needs. Ultimately, TGfU stands as a valuable framework for cultivating lifelong engagement in physical activity by empowering all students to achieve their full physical literacy potential within an inclusive PE environment.

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