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METHODOLOGY

Tactical Games: An Inclusive Pedagogical Model for K-12 Students in Physical Education

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Abstract

The literature regarding K-12 student experiences in physical education (PE) has long identified issues regarding curriculum and social justice. Contributing to this narrative, the most widely used pedagogical model in K-12 PE programs in the U.S. and worldwide is the multi-activity (MA) or physical-education-as-sport techniques approach. Conversely, alternative options like the Tactical Games (TG) model have been shown to be effective in motivating students and increasing activity levels during physical education (PE) lessons. The TG model prioritizes student tactical understanding and skill development using modified games and/or simulations so all students may experience success. Therefore, in partnership between a PE Teacher Education (PETE) program and an all-girls private high school (HS) in the Northeast United States, a pilot study was designed to explore the implementation of the TG model as an alternative to MA. By practicing a TG lesson several times during the intervention, participating PE pre-service candidates reported better comfort with and more likely

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use of TG in the future. At the same time, most HS student participants reported high levels of enjoyment and limited previous experiences with the TG lesson structure. Results suggest the TG pedagogical model may be an inclusive option for physical educators to consider for diverse K-12 students and learning environments today.

Introduction

According to the Society of Health and Physical Educators (SHAPE) America (2013), "The goal of physical education is to develop physically literate individuals who have the knowledge, skills and confidence to enjoy a lifetime of healthful physical activity." (p.1). To meet this goal, physical educators must create and deliver a meaningful and enjoyable curriculum that meets the needs of all students. The physical education (PE) profession has long recognized this issue from a curricular and social justice perspective (Bainville et al., 2021; Olafson, 2002).

From a curricular context, the predominant pedagogical model used in PE programs in the United States and around the world is multi-activity (MA) (Ennis, 2006; Kirk, 2009; 2013) or physical-education-as-sports-techniques (Kirk, 2009, 2013). The model is a skills-in-isolation *'molecular'* approach that many middle and high school (HS) students dread (Ennis, 2006; Kirk, 2009, 2013). Despite these perspectives, the hope is that traditional decontextualized practice will improve student performance in ensuing authentic play (Kirk, 2009; Moy et al., 2023). However, PE's limited offerings (one to three times per week) in K-12 schools, along with MA's short bouts of skill practice, instead cater to the highly skilled while limiting opportunities for participation and success with the majority of students. Furthermore, the MA model is widely criticized for its *'one-size-fits-all'* tendency to disenfranchise and/or marginalize girls and lower-skilled students (Ennis, 2006; Gosset, 2019; Kirk, 2009; Portman, 1995).

The Tactical Games Model

Tactical Games (TG) is a pedagogical model PE teachers use to enhance students' strategic and tactical understanding of the game (Griffin et al., 1997; Mitchell et al., 2006). A practitioner implementing the model begins PE class with a modified or small-sided game

simulation designed to present a problem or challenge for students. The ensuing teacher-facilitated student inquiry session is a key feature of TG. It targets student discovery of skill(s), tactic(s), and concept(s) important for success in the game. The lesson concludes with the same game played at the beginning of the class while students practice the skill(s), tactic(s), and/or concept(s) highlighted in the prior discussion (Dyson et al., 2004). Models like TG provide physical educators with an alternative to "skills and drills" MA that prevail in many PE programs, allowing students to learn skills, practice strategies, and game concepts (Dyson et al., 2004).

Numerous Physical Education Teacher Education (PETE) programs provide instruction on TG, but researchers (Harvey & Pill, 2016; Kinnerk et al., 2018) have reported that few PE teachers use the approach due to confusion with competing versions (ie., TGfU, Games Sense) and the lack of hands-on practice and professional development applying the model. Transferring the model from peer teaching to field experiences and professional induction has also proved to be a challenge for PETE pre-service candidates (noted hereafter as "candidates") (Moy et al., 2023). Acknowledging candidates, high school students, and local physical educators' limited experiences with TG, PETE faculty from a regional comprehensive university in the Northeast United States partnered with an all-girls private high school (HS) to explore how the TG model may be a possible alternative pedagogy to the predominant MA curriculum utilized in K-12 PE programs.

An intentional pilot project to integrate the TG model was designed and conducted by two PETE faculty with over 30 years of combined teaching and candidate preparation experience. The pilot study was developed to address whether the TG model may be a realistic alternative pedagogy to MA in PE class. The second goal of the pilot study was to provide candidates an opportunity to practice utilizing the TG model in an authentic K-12 PE setting. The results and reflections from this pilot will be presented in this paper.

Method

To ensure success at all levels, the project included several phases detailed below. This began with candidate knowledge of TGs (training and mock lesson), followed by participatory experiences in TG lessons, and culminated with two opportunities to teach a TG les-

son—one to fellow peers (candidate peer teaching) and one to HS students including observation by current practitioners (candidate co-teaching).

Participants

Three distinct sets of subjects participated in this pilot study. The first group included candidates in a secondary PE methods course with both undergraduate (n=11) and graduate (n=15) candidates (total n=26), one or two semesters away from student-teaching. Five female and six male undergraduate students were enrolled in the class, while the graduate level included four females and 11 males, respectively. The second group of subjects who participated in the study were two female HS PE teachers. The HS students (n=65) were the final group who participated in the project. All HS students were female and divided into three classes of 20-24 students in grades 9-12.

Data Collection and Instrumentation

The study included video-recorded lessons with subsequent fidelity, interobserver agreement analysis, and a collection of survey data from each set of subjects (candidates, HS students, HS PE teachers). All candidates were surveyed twice during the project—once after the mock lesson and a second time after the co-teaching lesson. The two teachers in the study also completed an electronic survey after the pilot. In each instance, the surveys were brief and included three to four questions designed to solicit feedback and insight related to the use of TG. Questions polled subject groups regarding the TG model's application (observed or applied), perceived rates of physical activity, and whether the model would be welcomed or utilized in the future.

Training and Mock Lesson

Initial candidate training included assigned readings and lectures on the TG model by a PETE faculty member. During the lecture, the model's theoretical foundation, purpose and structure, and effectiveness of the research were presented to candidates. The following class, the professor delivered a mock TG rugby lesson, during which candidates, acting as HS students, participated in a TG lesson.

Candidate Peer Teaching

During a methods class before the co-teaching experience at the HS, candidate groups were allowed to plan and practice (peer teach) their assigned group lesson. Every candidate was required to teach a practice lesson lasting approximately 15-20 minutes. The rotation for the peer-teaching practice session included one group presenting their lesson, four groups participating as students, and the next group preparing and setting up their lesson on the adjacent court.

The two PETE faculty observed each candidate group, and feedback regarding lesson delivery and fidelity to the TG model structure was provided after all practice lessons were completed. Generally, candidates were successful with the assigned TG practice lessons but were provided constructive feedback to improve their subsequent co-teaching lessons at the HS. The inability of candidates to effectively facilitate the TG model's inquiry session, which is crucial to the discovery of important gameplay skills and concepts, was the primary critique from the two PETE faculty. Candidates were encouraged to use a combination of primer and open-ended questions to augment learning and further discussion. To conclude the debriefing session, candidates were asked to take notes, reflect, and make necessary adjustments for their upcoming HS co-teaching lessons.

Candidate Co-Teaching

The pilot study also provided candidates with an opportunity to teach the six TG lessons over a two-week period. The high school's proximity to the PETE campus and demographics enabled the researchers to facilitate the study's goals. Three lessons were taught in weeks one and two.

The candidates were divided into six groups of four to five. Each was assigned a TG model lesson (basketball, rugby, soccer) from the *Teaching Sport Concepts and Skills: A Tactical Games Approach* textbook (Mitchell et al., 2006). Two groups of candidates taught sequential rugby lessons to a grade 9 class of 20 students. Similarly, sequential basketball lessons were taught by two groups of candidates to a grade 11-12 class of 24 students. The remaining two groups of candidates taught sequential lessons in soccer to 21 students in a combined grade 10, 11, and 12 PE class.

The candidates used the same lessons from their previous peer-teaching exercise adopted from Mitchell et al. (2006). All co-teaching lessons were observed by one of the PETE faculty and also video recorded. Additionally, a debrief session conducted between the professor and candidates to discuss TG model successes and challenges during the co-teaching lesson. The standardized PETE institutional lesson observation form utilized for all field experiences was also used for formative purposes.

Overall, the PETE faculty member who attended the co-teaching sessions observed an improvement in candidates' TG lesson model delivery and structure compared to the previous peer-teaching session. The HS students were also clearly engaged and enjoyed the experience. However, the questioning and comfort with refining or extending small-sided simulations aligned to learning targets was still a general weakness with many candidates. Watching the recorded lesson provided candidates with an opportunity to reflect on strengths and areas for future improvement.

Treatment Fidelity

Fidelity to the TG model was also an important consideration in the pilot. Research regarding the accuracy of treatments in the PE profession is limited and often underreported (Stylianou et al., 2016). Therefore, this pilot included steps to evaluate model fidelity. Feedback provided by PETE faculty throughout the pilot study always targeted TG accuracy and lesson delivery. Before reaching the final phase of the pilot, PETE faculty required candidate groups during the peer teaching lesson to demonstrate each of the following four critical features of the TG model: 1) game 1; 2) debrief and inquiry session; 3) drills and tasks; and 4) game 2 (modified or replicated from game 1). This was accomplished successfully by all candidate groups, allowing progression to the last phase of the project, where candidates co-taught their TG lessons to students.

After the co-teaching lessons were implemented, fidelity was further assessed by conducting a model benchmarks analysis established by Metzler (2011). Three video-recorded co-teaching lessons were randomly selected for review by two PETE faculty (coders) using the same teacher and student benchmarks established by Gurvitch et al. (2008). The teacher benchmarks included: 1) the use of tactical problems as the organizing center for the learning tasks; 2) beginning

each lesson with a game form to assess students' knowledge; 3) the use of deductive questions to get students to solve tactical problems; and, 4) the use of high rates of guides and feedback during situated learning tasks. The following student benchmarks were also utilized: 1) students provided time to think about deductive questions regarding the tactical problem; 2) students make situated tactical decisions; 3) game modifications are developmentally appropriate; and 4) students increase tactical knowledge as they progress through tasks/activities. Both teacher and student benchmarks were checked following Gurvitch et al.'s (2008) 3-point rating scale (*Not at all, Ok, and Very Well*), and because of its simplified options, interobserver agreement was set at 70% (Osbourne, 2008).

Interobserver Agreement

Interobserver agreement (IOA) was established by reviewing three random video-recorded co-teaching lessons and aggregating three-point rankings for each candidate and student model benchmarks between both coders. Strong agreement was observed when both coders reported the same ranking (*Not at all, Ok, and Very Well*). Agreement was observed when both coders used a combination of *Ok* and *Very Well,* and disagreement was observed when one coder scored the video with *Not at all,* while the other scored an *Ok* or *Very Well* ranking.

During co-teaching lessons, teacher benchmarks were met in all three randomly selected video recordings with a 100% IOA rating. During observation of video recordings, coders reported the same ranking on 9/12 (75%) and agreement (combination of *Ok* and *Very Well*) on 3/12 (25%) on teacher benchmarks. There were no instances of disagreement (a combination of *Not at all*, and *Ok*, or *Very Well*). Similarly, student benchmarks were consistently observed with approximately a 92.7% (11/12) IOA rating. On 10/12 (83.3%) student benchmarks, coders reported the same ranking compared to one case each (1/12 or 8.3%) of agreement (combination of *Ok* and *Very Well*) and disagreement (a combination of *Not at all*, and *Ok*, or *Very Well*).

Together, the coders reported the same rankings on 19/24 (79%) teacher and student benchmarks. Agreement (combination of *Ok* and *Very Well*) was observed by coders on 4/24 (17%) of the model benchmarks cumulatively with one instance (1/24 or 4%) of dis-

agreement (combination of *Not at all*, and *Ok*, or *Very Well*). Overall, the aggregate IOA between the coders with model benchmarks was 96%. This was calculated by adding coder instances of the same rankings (19/24 or 79%) along with cases where both coders either scored *Ok* or *Very Well* (4/24 or 17%) on model benchmarks.

Results

Survey findings collected during the practice phases of this pilot have been categorized into themes for further discussion. The themes include 1) Activity/Involvement/Engagement; 2) Lesson Structure; 3) Inquiry/Reflection; and 4) Content Knowledge.

Activity/Involvement/Engagement

During the co-teaching lessons, most candidates surveyed perceived that students were moderately to vigorously active during the lesson. Four candidates reported that students were providing maximum effort (feels almost impossible to keep going, completely out of breath, unable to talk; cannot maintain for more than a very short time) or very hard (very difficult to maintain exercise intensity; can barely breathe and speak only a few words). Six candidates reported students to be vigorously active (borderline uncomfortable; short of breath, can speak a sentence), and 12 candidates indicated that the students were moderately active (breathing heavily, can hold a short conversation; still somewhat comfortable, but becoming noticeably more challenging). Only two candidates reported that students demonstrated light activity (it feels like you can maintain it for hours; it is easy to breathe and carry a conversation).

These results were consistent with teachers and students' ratings of perceived exertion. For example, both teachers reported favorable student levels of moderate to vigorous activity during the lessons while nearly 65% of the students also indicated moderate to vigorous activity during the lessons.

Other similar themes prevalent throughout the pilot study were also noted. Candidates responded positively regarding the authentic experience at the HS. There were many comments related to student engagement and learning, with candidate 7 reporting that, "*girls seemed engaged in the lesson and we're giving effort throughout the class,*" candidate 2 reporting, *"the students were very engaged and into what they were learning which is always a plus in PE,"* and candidate

4 reporting *"students learned objectives, were able to explain the rules of the game and enjoyed rugby."* Students were also reportedly enthusiastic with participant 14 responding, "*It was soooo much fun, and very interactive,*" participant 8 reporting, *"It was a little different because we had to communicate with each other,"* and participant 48 reporting that the lesson was *different because there was more one-on-one help."* Overall, most students (63%) surveyed were positive about the experience, with many expressing how much they enjoyed participating in the TG model lessons taught by candidates.

Lesson Structure

The pilot's participants also highlighted the unique features of the TG model. Candidates were generally unfamiliar with the model, with fourteen (56%) reporting that TG was unique or different from what was previously experienced in K-12 PE or witnessed in field or practicum placements. A small group of candidates identified some of the distinct features of the TG model, with candidate 23 stating that the lesson" *was very different—starting with a game then going to drills to improve the game then back to the original exercise to hopefully do a better job performing"* and another candidate 1 identifying a difference because "*we played a game, then worked through drills instead of working through drills to eventually play the game*."

Comparatively, the teachers were excited about the unique TG model lesson structure. The immediate exposure to a game situation rather than a typical PE lesson structure (presenting, practicing, and playing games with skill) was particularly appealing to both PE teachers. Most students (66%) also noticed that the TG lessons taught by the candidates were unique.

Inquiry and Reflection

Another noticeable theme prevalent was feedback regarding inquiry and reflection. Candidates throughout the experience referenced the importance of these features and how they facilitated learning: Candidate 23 noted, "*This helped the class understand what we were going to work on in the drills that followed but also help in first drill*" and candidate 12 reported, *"It relates by introducing strategies to get open without the ball. It made the students figure it out*." Two candidates also reinforced the importance of the TG questioning intermediary session: Candidate 20 responded, *"The reflection period*

helped us create the skills we truly need for the activity," and candidate 1 responded, "*We talked about tactics on how to be more successful, worked on drills to be better, then we played the original game better the 2nd time*." At the same time, candidates were reflective, recognizing the need to improve their questioning skills. Candidate 3 reported, "*we could ask better questions to the students,*" candidate 11 suggested, *"spend more time on the questioning aspect,*" and candidate 22 recommended, *"be more detailed on my questioning*."

A majority of HS students (67%) indicated the debrief session after the first game helped improve gameplay later in the lesson. Responses included, "*it gave me a chance to understand what we were doing*" (participant 45), *"it helped me learn what I needed to do differently to play better*" (participant 52), *"and it helped me understand and play the game more consciously"* (participant 14). Another student was able to apply broader connections as a result of the inquiry task: "*we would meet in the middle and talk about new skills or components of the game to work on and then when we went back to our baskets to play 3 v 3 we would work in that skill*" (Participant 54).

Content Knowledge

Comments and feedback associated with the content knowledge necessary to deliver the model with high fidelity was the last major theme reported among candidates in the pilot study. While candidates were intrigued with TG, many stressed the need for adequate content knowledge of the sport or physical activity and pedagogical knowledge of the TG model to conduct a lesson effectively. For example, candidates suggested more requisite knowledge of the game was crucial for TG success: "*Rules of the game you're teaching, effective strategies, practicing it myself"* (Candidate 9), and "*You should know the rules/objectives of the game of rugby*" (Candidate 20). Candidates also recommended a better understanding of the competencies and progressions within the sport: *"More info on rugby to have a better understanding*" (Candidate 1), and *"How to develop individual exercises and segments to help students to be proficient in the game*" (Candidate 24). Further supporting the need for a strong comprehension of the model, some candidates provided comments displaying a lack of understanding of TG related to traditional experiences in PE. For example, Candidate 18 conveyed confusion by questioning, "*Beginning the class with a game instead of a drill,*" while

both candidates 12 and 8 also asked why *"there was no warm-up or any gross motor skills going on"* (Candidate 12) and *"there was much more movement going on by everyone participating"* (Candidate 8).

Discussion

The purpose of this pilot study was to explore the potential of TG as a possible pedagogical model to consider instead of MA for K-12 students and current PE teachers. Additionally, providing candidates with authentic practice experiences utilizing TG was the study's second goal.

At the end of the TG pilot study, teachers, along with the candidates, reported students to be active and engaged with the lessons. More importantly, students also enjoyed the opportunity to be connected to the learning experience. This outcome is supported in the literature, where the social aspects of the game lead to more engagement and enjoyment (Harvey et al., 2017; Mandigo et al., 2008). Similarly, the inquiry and reflection inherent within TG were well-received by all participants. This feature (inquiry and reflection) provides space for questioning. It enriches the student learning experience by integrating the psychological and social aspects of a constructivist teaching environment where learning is holistic, involving both the mind and the body (Harvey et al., 2017; Light, 2008).

At the same time, the lesson structure of TG was reported to be unique for most participants. This can be seen as both a positive and negative finding. First, the TG model is not a new approach and yet may still not be well-known or utilized in K-12 PE settings. This highlights the sustained dominance of MA and the continued socialization of the model in PE programs (Lindauer & Seymour, 2021). More research regarding practitioner knowledge and TG usage in K-12 settings would be helpful moving forward.

Conversely, the lesson structure of the TG model drew enthusiasm from most participants, particularly the students. The opportunity to begin with a game followed by inquiry and reflection was a welcomed change reported by students, candidates, and teachers. The manipulation of learning conditions to promote inquiry and interaction with the pupil, others socially, and the environment was critical for physical activity or sport development while allowing for a more authentic learning experience (Light, 2008). In addition, the

success of utilizing the TG model with an all-girls HS PE program in this pilot should not be ignored, given the aforementioned criticisms of MA, which historically has alienated lower-skilled and female K-12 students in PE (Ennis, 2006; Kirk, 2009; Lindauer & Seymour, 2021). Therefore, further investigation of TG as an inclusive or socially just pedagogy is warranted (Jones et al., 2023).

Finally, the need to be well-versed in sport content knowledge was also stressed by candidates. The training of candidates and/or teachers to design and manipulate the learning environment meeting the developmental needs of K-12 students while simultaneously being able to transition between games and practice tasks fluidly is crucial for TG success, a point that has been consistently advanced in the TG literature (Harvey & Pill, 2016; Kinnerk et al., 2018).

Moy et al. (2023) provide the same recommendations but suggest that training with models like TG during PETE programs must be layered and dynamic. In many cases, candidates are not equipped to try new approaches and/or counter the obstacles they may face during fieldwork or induction (Moy et al., 2023; O'Leary, 2016). This includes the beliefs or philosophies toward PE of current mentors/colleagues, the quality of the PE program, and/or the priority of PE within the school district itself (Moy et al., 2023). Therefore, as demonstrated in this study, providing candidates with hands-on experiences to work with K-12 students is critical but not enough. Intentionally embedding multiple practice experiences with alternative pedagogies like TG at various PETE program stages could help change candidates' de facto reliance on MA. This also includes integrating TG model support, reinforcement, and reflection from candidates, peers, mentor teachers, and PETE faculty (Harvey & Pill, 2016; Moy et al., 2023). The use of models like TG helps candidates develop their foundational teaching knowledge and provides a supportive environment with much-needed feedback and confidence to try new pedagogies. Lindauer and Seymour (2021) refer to the above process as integral in disrupting the continued socialization of MA in K-12 PE settings and thus subsequently becoming pedagogically fluent in a new pedagogical language–in this case, TG.

Conclusion

Overall, the TG model pilot study was successful. Candidates could experience all facets of the TG model while authentically

delivering sample lessons to HS students. Candidates also reported a very likely use of the model in future teaching. Similarly, HS PE teachers responded favorably to TG and liked the game-practice-game structure of the model itself.

While the pilot study was designed for implementation at an all-girls private HS, the findings are useful and provide future lines of inquiry to investigate. For example, a majority of the students who participated in the project reported enjoyment of the TG lesson experience. This is promising given the limited exposure to the TG model within the intervention and suggests that TG may be a more relevant and inclusive option for physical educators to use. Moreover, the TG model may help beginning teachers succeed in settings with diverse populations, providing candidates with the knowledge and skills to be successful teachers. This is an important consideration given the literature regarding induction into the PE teaching profession which reveals high turnover rates for beginning teachers who are under-prepared or unable to connect with K-12 students who differ from a sociodemographic and/or geographic context (Silwa et al., 2017).

Relatedly, future research exploring specific features of the TG model that may promote inclusion and unity among K-12 students could be fruitful. For example, the modification of rules and features of a task during TG could go beyond skill and tactical emphasis and address social issues like power relations (Jones et al., 2023). As a result, the built-in discussion phase of the TG model may provide K-12 students with an opportunity for discourse and social inquiry (Jones et al., 2023). Kirk (2020) refers to these model types as *pedagogies of affec*t and defines the "...term affect to refer to the 'affective domain', of (among other things) interest, motivation, perseverance, valuing, caring, resilience, and joy" (p. 151). Pedagogical models like Teaching Personal and Social Responsibility, Sport Education, and other activist approaches are given high praise, but additional research exploring TG as an inclusive approach and making its case to be added to this distinguished group are needed.

In conclusion, the positive results of this pilot study are useful and align with previous TG research (Harvey et al., 2017; Harvey et al., 2015; Hodges et al., 2018; Smith et al., 2015). The limited disruption to existing curricula and/or PE programs, along with the potential to eradicate many curricular and social justice issues exac-

erbated by MA, make TG a possible inclusive model for candidates, current physical educators, and the vast group of K-12 students in the many disparate PE programs of today.

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