

Evaluation of teaching games to understand how to improve the motivation levels of children with special needs

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Abstract

Research into the use of the teaching games for understanding model (TGfU) in education has mainly focussed on mainstream settings and with children who have not been formally diagnosed with having an additional or specific educational need (SEN). The purpose of this study was to evaluate the impact of the TGfU model through the introduction of a new physical activity into an SEN secondary school curriculum called Kin-Ball. Kin-ball was used as the medium in which the students with special needs were guided through the stages of the TGfU model and then each student reviewed their learning by completing a questionnaire after each lesson. The research problem was whether the TGfU model and its principles could have an impact on the motivation, engagement, and activity levels of the students with special needs. After a comprehensive literature review there have been very few research papers which have looked at this specific area with only one specific article on this subject coming from Malaysia (Ibrahim, 2021). The findings of this paper show that there was a positive change in the levels of motivation, engagement, and activity levels in a significant number of students who took part in the study. However, it is acknowledged this might have come about because of the introduction of Kin-Ball and not just as a result of introducing the TGfU model. It was also noted that this was a small-scale study and future research would focus on a larger number of students and across a range of curriculum activity areas. However, the paper advocates that physical education teachers who teach children with special needs should consider implementing a models-based approach at a suitable point during the academic year even as a pilot activity.

Key Words TGfU Model, Kin-Ball, Additional Needs, Engagement, Activity Levels, SEN.

Introduction

According to Rizal et al. (2019) special needs children (SEN) will begin to be entertained through the process of teaching and learning. The teaching games for understanding model (TGfU) has offered a method that can increase the motivation of students to do activities for their enjoyment to encourage the desire to engage in teaching and learning activities (Ibrahim, 2021). According to Sallis et al. (2000) and Kueh et al. (2019), beliefs, attitudes, motivations, and emotions have a significant influence in influencing special needs students' involvement in physical activity and enhance learning especially related to clinical thinking (Marin & Halpern, 2011). By using the TGfU model, its pedagogy and principles the purpose of this article is to determine whether students with special needs can become more motivated than they would be taught in a traditional, didactic skills-based approach. The teacher-researcher in the study is an experienced teacher of physical education but has not taught children with special needs using a models-based approach before and therefore this is very much a new experience for everyone. Leading to the question of whether the teacher-researcher could successfully introduce and adopt the TGfU model as a part of the current physical education curriculum for children with special needs.

The aim of this study is to evaluate the levels of student motivation using the TGfU model with ten 14- and 15-year-old students who all have social, emotional, or mental health issues (SEMH) when introducing a new physical activity called Kin-Ball. Kin-Ball is a team sport created in Canada (Demers, 1986) and the main characteristics are the larger size of the ball and that the games are played between three teams at the same time instead of two. By introducing Kin-Ball as an alternative physical activity it was hoped the students would become more motivated and have a greater sense of fun and enjoyment due to the new activity and this would agree with the research by Coulter and Ní Chroinin (2013); who indicate that if PE does not focus on student's learning, it will be difficult to generate understanding, learning and student satisfaction.

“There is a growing body of evidence suggesting that engagement in a diverse curriculum can have several physical, psychological, and affective benefits ranging from increased levels of physical activity” (Mears, 2008) to increasing pupils' motivation, enthusiasm, and participation (Sutliff & Ottrando, 2006). Also, according to Casey & Quennerstedt (2015) teachers' methodological approaches will determine student's motivation to perform extracurricular sport, but this study was only focussed on the sports students undertook after-school and did not focus on the motivation of students during curriculum physical education. But their research did go on to highlight that physical education is directly related to the generation of positive attitudes and motivation of students. There was also a study by Sanchez et al (2010) who discovered that by using an

alternative activity, it can provide an increased advantage on the physical, social and psychological levels of young people. Mulvihill et al (2000) also argued traditional sports have become boring and too rigid for the new generation of students.

The main reason the TGfU model was selected in this study is because of the research conducted by Stolz & Pill (2014). They highlighted that one aspect that characterizes the TGfU model is the understanding of game knowledge, 'which promotes intrinsic motivation'. The teacher-researcher also wanted to draw upon the work of Kirk (2017) who said that all pedagogical models contain three key features, a main idea, critical elements and learning outcomes or aspirations. The main idea in this study was to determine whether the students were more motivated during their physical education lessons as a result of playing a new team game called Kin-Ball. The teacher-researcher started this process by working through the various stages of the model as described in the original work by Bunker and Thorp (1982) Kirk & MacPhail (2002) and then further discussed by O'Leary (2016).

O'Leary (2016) stated that for the TGfU model to become most effective then the learning units or lessons should follow the same structure. His suggested order was "1) Play: a game was modified to promote students' participation and interaction, 2) Tactical awareness: teacher and students worked on tactical elements, and 3) Ability execution: selecting the technical elements necessary to perform the tasks".

This structural design was described in a different way by Kirk & MacPhail (2002) who said the essential characteristics of the model were "A) Transference: different skills between sports using common teaching sequences, B) Representation: adapting the sport structure to the student's needs, C) Exaggeration: changing tactical elements in a task to make them more visible, D) Increasing tactical complexity: to facilitate its understanding, and E) Authentic assessment: conducting it in real game situations". But in essence the model has remained very stable since its inception in the early 1980's and this has been researched and analysed by many authors including Goodyear et al (2016) & Stolz & Pill (2014).

White (2002) stated it was his belief that there are philosophical considerations to engaging children in terms of how they can be motivated, what they think and what they want. Furthermore, he went on to say that the main way to motivate children is to use their desires and beliefs to tailor lessons to engage them in their learning. The TGfU model allows students the opportunity to learn by playing games. It is an approach which allows the teacher to set-up a range of modified games and to educate the students using the model architecture above to enhance learning and promote factors such as motivation. The TGfU model suggests that there is a limit on teacher instructions, and this can therefore encourage self-discovery gives students the ownership of their own learning and development. The TGfU model allows the students to learn autonomously and within this study it was imperative for this to happen because it would allow the students a sense of whether they were motivated more to take part or not.

According to Kirk et al (2002) he suggested that the TGfU model could be broken down into three main phases. These are a main idea, the critical elements and then the learning outcomes and in the context of this study, the teacher-researcher wanted to evaluate the impact of whether the individual levels of student motivation had increased because of using the *practice architecture* of the TGfU model as suggested by Goodyear et al (2016). The architecture of the model were the stages highlighted above as well as specifically in this study the main areas of motivation including *enjoyment*, *intension* to be more active and the ability to become more *independently autonomous* in their levels of motivation.

It was these three learning outcomes which come from the work of Deci & Ryan (2000) which inspired this study and classified these areas as the basic psychological needs (BPN) in determining the levels of student's motivation in relation to physical education. The TGfU model becomes the "*organising centre*" (Metzler, 2005) for physical education programmes rather than the currently dominant multi-activity subject matter focus (Kirk, 2017).

Materials & Methods

In this specific investigation a total of ten students took part and they all had an Education and Health Care Plan (EHCP) and were in Key Stage 4 of an SEN secondary school. All of the students were able to take part in a range of physical activities and had no physical disabilities. The study took place when the teacher-researcher was teaching a Kin-Ball unit of work with lessons timetabled for 45 minutes. The unit consisted of eight lessons, taught twice per week over the period of one month in the autumn term and the ten students were each split into two separate teams at the beginning of each lesson.

Each student completed a questionnaire immediately after each lesson of Kin-Ball. This allowed the students to reflect upon their learning straight after it had happened and before they left PE and moved on to another lesson. The reflections were compiled, percentages of results were drawn up based upon the ten responses to each question by each of the students. The results from the questionnaires were collated, analysed, and then shared with the students at the end of the investigation. None of the students had any prior experience of either taking part in Kin-Ball nor completing a questionnaire after a PE lesson. The students also had not taken part in any other studies or were made directly aware that they would be learning Kin-Ball through the TGfU model.

The questionnaires were designed to provide the teacher-researcher with a 'sweet spot'. A five-item scale that would give a representative cross-section of a student's experience to improve measurements (Gehlbach & Artino Jr, 2018). The teacher-researcher used the Likert Scale as a method of good practice for designing the questionnaire. This is supported by the research of Carifio and Perla (2007) who viewed the Likert Scale as a way of measuring multi-items responses and that the scale is helpful and supportive to provide a unified result. The teacher-researcher encouraged the students to answer the questions openly and honestly and then went on to remind them that the information was going to be used without naming anyone. This is a form of action learning which is supported by Beard & Wilson (2002) who state that this form of action learning can provide invaluable for improving a teacher's knowledge of their students.

At the beginning of the research the permission from Trust CEO was obtained to carry out the study. Subsequently, informed consent from all participating students' parents was obtained and finally the students completed a questionnaire anonymously and voluntarily at the end of their PE lessons. This was to ensure the correct ethical and safeguarding assurances were in place before the study took place and the safety of everyone connected to the study was given paramount importance.

The teacher-researcher used an adapted version of the motivation questionnaire as described by Cervelló et al., (2007). Originally the questionnaire consisted of 24 items that measured two dimensions firstly the task climate and also the ego climate. All 24 of the questions started in the same way – "In my physical education (PE) lessons..." and then moved on to ask the students about how their motivation levels had changed because of the introduction of the TGfU model into their PE lessons. The teacher-researcher decided that 24 questions would be too demanding for the SEN students and therefore adapted this by removing 12 of the questions and only focussing on those regarding autonomous motivation, activity levels and their enjoyment levels which are the three main factors within the BPN research. Each student answered a total of 12 questions with each BPN area having 4 questions to work through. An example of the type of questions includes, "In my PE lessons I usually carry out all of the tasks?" Previous research by Amado et al (2014) and Arias et al (2013) has demonstrated the internal reliability of this type of questionnaire.

Results

The results from the study show that the students felt highly motivated and that they had enjoyed the lessons with 90% of students feeling positive after using the TGfU model to play Kin-Ball. This finding would agree with the research conducted by Wang & Ha, (2013) who also found that by using the TGfU model had increased the positive engagement of their students in lessons as well.

A further 80% of the students felt that they were in greater control of their learning and therefore felt that they were more autonomously motivated when taking part in their Kin-Ball PE lessons. This shows that there is a clear perception among the students that they were able to learn independently, and this has contributed to a high percentage of students feeling in control of their own learning outcomes. This has also been reported in previous studies by authors such as Mandingo et al (2008).

A third result from the study showed that 80% of the students highlighted that they were more active during the Kin-Ball lessons than they had perceived from their other PE lessons. This was the third factor within the BPN research and therefore with a high percentage of results across all of the BPN areas the teacher-researcher is confident that the levels of student motivation were higher as a result of playing Kin-Ball through a TGfU model.

Furthermore, it could have also been the teacher-researchers interest and enthusiasm for learning through this TGfU model which might have given the students more success and competence and this must not be overlooked. For example, in a study by Tan et al (2012) they reported that by giving students the opportunity to solve tactical problems through modified games using the TGfU model was a significant feature in their findings because of the positive connection between members of the group.

Discussions

The purpose of the study was to investigate the effectiveness of the TGfU model on a unit of Kin-Ball taught to SEN students based on their perceptions levels of motivation. The motivation aspects which were investigated were their autonomous motivation levels, enjoyment, and the student's intention to be physically active. The increase in students' perception of autonomy observed in this study has been reported in previous studies when mainstream students have been taught via the TGfU approach Mandingo et al (2008). But there has not been any previous research where this has been tested on student with special needs.

In this unit, the students had to learn a completely new sport in Kin-Ball and they were supported by the teacher because were provided with the opportunity to solve tactical problems through modified game play. This led to an increase in the perceptions of autonomous motivation, enjoyment, and the intention to be physically active. These are all positive notes for other teachers of physical education to become aware of and this is something the students themselves wanted sharing. Whether this could be applied to a mainstream setting with a cohort of SEN students taken out of their traditional PE lessons is something for another study.

Although the results may indicate the positive effect of the TGfU model on BPN, autonomous motivation, enjoyment and intention to be physically active, the results should be noted with some caution

because it's a teacher-practitioner study with a small sample of SEN students within an SEN setting. It was always the intention of the author to ensure there was no bias involved in reporting of any of the results and it would also be interesting to know in a future study whether the levels of teacher experience could have had an impact on the results along with the variables between boys and girls. There were no girls involved in this study and this might or might not have had an impact on the overall results.

Also, it would have been interesting to compare two different groups of students and allow one group to act as a control group and instead of adopting a new alternative activity such as Kin-Ball continue with the same activities detailed in the curriculum plan such as Badminton or Basketball. Future studies could also compare these results with direct teacher led instructional models, where the teacher is at the centre of teaching / learning and students reproduce movements prescribed by the teacher.

Further research could also focus on the extent to which the teacher utilises autonomous and controlling behaviours could be examined and why certain groups may not demonstrate similar changes in motivation to others. Finally, it would also be interesting to include qualitative data on student perceptions. This will allow further studies to triangulate the findings and provide more detailed information on motivational changes experienced by students when they experience PE units taught through different models such as Sport Education.

Conclusion

In conclusion the findings show that the motivation of the SEN students had improved, and the enjoyment of learning Kin-Ball was more successful being taught through the TGfU autonomous games-based approach rather than a traditional skills model. The results highlight that a significant number of students with special needs were engaged in their learning of Kin-Ball through this approach and this is something to consider for physical education teachers. As the activity levels of the students also increased it was interesting to observe the students move around more and become more active during their physical education lessons.

According to Goodyear et al (2016) the TGfU model's *practice architecture* is the most important element because it allows the physical demands of an activity to increase student success, and this was also highlighted as a result of this study with SEN students. The students felt in more control of their own learning and as a result of this felt that they were able to make a greater level of progress against the learning outcomes from the lessons. The teacher-researcher noticed the enjoyment levels of the students was more positive and this would be a further area to review in a follow-up study.

Using Kin-Ball has shown that the motivation levels of students in this study have increased. Teaching Kin-Ball using the principles of the TGfU model has allowed the students more games-based activity time and this has diversified the curriculum given the students a flavour of a new activity. The way the students positively engaged with the lessons was encouraging and has given the teacher-researcher more confidence in using a different teaching approach. The next-steps for the teacher-researcher would be to teach another activity through TGfU.

Finally, the study also found that the SEN students gained a greater feeling of a positivity which led to a higher level of enjoyment and greater level of motivation when taking part in their PE lessons. This is important because the teacher-researcher started out wanting to know if by introducing a new activity such as Kin-Ball would further motivate the students or would it not make a difference. It's clear from the findings that the introduction of Kin-Ball taught through a models-based approach has its worth and benefits when it comes to teaching physical education outside of mainstream education.

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