

# Can cooperative learning achieve the four learning outcomes of physical education? A review of literature

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1 **Can Cooperative Learning achieve the four learning outcomes of physical education?:**

2 **A Review of Literature**

3

4 **Abstract (150 words)**

5 Physical, cognitive, social, and affective learning are positioned as the legitimate learning  
6 outcomes of physical education It has been argued that these four learning outcomes go some  
7 way to facilitating students' engagement with the physically active life (Bailey et al., 2009;  
8 Kirk, 2013). With Cooperative Learning positioned as a pedagogical model capable of  
9 supporting these four learning outcomes (Dyson & Casey, 2012), the purpose of this review  
10 was to explore 'how has the empirical research in the use of Cooperative Learning in physical  
11 education reported on the achievement of learning in the physical, cognitive, social, and  
12 affective domains (or their equivalents)?' The review found that while learning occurred in  
13 all four domains, the predominant outcomes were reported in the physical, cognitive, and  
14 social domains. Affective learning was reported anecdotally and it became clear that more  
15 work is required in this area. The paper concludes by suggesting that research into the  
16 outcomes of this, and other pedagogical models, needs to focus on learning beyond the initial  
17 unit and over a period of years and not just weeks.

18 *Keywords:* Peer-assisted learning, group work, competitive, individualistic learning

19 Can Cooperative Learning achieve the four learning outcomes of physical education?: A  
20 Review of Literature  
21 If physical education is to sustain its valued cultural and moral position within education,  
22 Kirk (2013) argued that we should focus on how best to promote the “educationally  
23 beneficial outcomes for students, across a range of domains” (p. 6). Drawing on Bailey et  
24 al.’s (2009) discussions on educationally beneficial learning outcomes in physical education,  
25 Kirk (2010, 2012, 2013), among others (c.f. Haerens, Kirk, Cardon, & De Bourdeaudhuij,  
26 2011; Metzler, 2011), has argued that we should comprehensively and cohesively address  
27 learning in the physical, cognitive, social and affective domains. Indeed, for physical  
28 education to be capable of promoting the physically active life, Kirk (2012) positioned these  
29 four learning domains as the legitimate learning outcomes of physical education. However,  
30 given that Bailey et al. (2009) felt that learning in these domains can only occur “given the  
31 right social, contextual and pedagogical circumstances” (p.16) how do we ‘know’ if  
32 legitimate learning is occurring?

33 One way in which the pedagogical circumstances, the legitimate learning outcomes of  
34 physical education, and a socio-cultural perspective to learning can be considered is through  
35 models (O’Sullivan, 2013), and more specifically pedagogical models (Kirk, 2013). There is  
36 an increasing level of advocacy for the use of pedagogical models, and at the forefront of this  
37 argument are Kirk (2012, 2013) and Metzler (2011). Kirk (2012) claims that for physical  
38 education to achieve cultural legitimacy in the medium (~10 years) and long term future (~20  
39 years) physical education should adopt a models-based approach. In other words, curricula  
40 should be organized around pedagogical models rather than the multi-activity approach.

41 Pedagogical models, nor curriculum or instructional models as Jewett and Bain (1985)  
42 and Metzler (2011) have respectively called them, are not new but some have received more  
43 attention than others. Certainly, while models including Sport Education and Teaching

44 Games for Understanding were constructed and developed in the 1980s by researchers in the  
45 field of physical education and sport pedagogy, Cooperative Learning only began to gain  
46 momentum in physical education during the early part of the 21st Century and emerged from  
47 its use in other curriculum subjects such as English, Math, and Science (Dyson & Casey,  
48 2012; Johnson & Johnson, 2009). Such has been the enduring presence of Sport Education  
49 and Teaching Games for Understanding that both have been the subjects of review of  
50 literatures of their own (for the two latest examples see: Harvey & Jarrett, 2013; Hastie, de  
51 Ojeda, & Lucquin, 2011). In contrast, Cooperative Learning has hitherto been clustered with  
52 Peer-Assisted Learning (PAL) in any systematic reviews in this area (see Ward & Lee, 2005).  
53 Given the emergence of Cooperative Learning as a legitimate pedagogical model in physical  
54 education (Dyson & Casey, 2012; Metzler 2011) it seems appropriate, at this time, to review  
55 the developing body of literature published in this area; especially if we are to better  
56 understand if the model is capable of facilitating learning in the four domains positioned by  
57 Kirk (2012) as the legitimate learning outcomes of physical education.

### 58 **Cooperative Learning as a pedagogical model**

59 Cooperative Learning was developed in the 1970s amidst concerns that students  
60 rarely had the opportunity to develop or even use their interpersonal skills in the traditional  
61 competitive and individual learning environments (Johnson & Johnson, 2009; Kagan &  
62 Kagan, 2009; Slavin, 1995, 1996). Through combining social and academic learning,  
63 Cooperative Learning was seen as a method of promoting students' interpersonal skills and  
64 their ability to interact and achieve in an ever changing economic and social society (Kagan  
65 & Kagan, 2009). Since its initial development Cooperative Learning has been researched  
66 extensively. The separate meta-analyses (Johnson, Maruyama, Johnson, & Nelson, 1981;  
67 Johnson, Johnson, & Stanne, 2000; Kyndt et al., 2013; Stanne, Johnson, & Johnson, 1991),  
68 and the reviews of literature (Johnson & Johnson, 1974; Slavin, 1983) suggest that

69 Cooperative Learning brings about significant gains to students' learning and furthers their  
70 development as young people. Indeed, the reported learning outcomes of Cooperative  
71 Learning from these analyses and reviews can be summarized as academic achievement (an  
72 ability to apply and understand content), interpersonal skill development and relations  
73 (communication skills and/or peer relations), enhanced participation (engagement with  
74 learning tasks), and an improvement in young people's psychological health (self-esteem  
75 and/or motivation).

76         These reported learning outcomes have great synergy with the aspired learning  
77 outcomes of physical education that were identified by Bailey et al. (2009) and later re-  
78 enforced by Kirk (2013). Certainly, in his positioning of Cooperative Learning as a model of  
79 physical education, Metzler (2011) drew on the work of Hilke (1990) to argue that  
80 Cooperative Learning was an achievement-orientated and process-orientated model. In other  
81 words, and when applying the learning outcomes of Cooperative Learning to physical  
82 education, the model is designed to foster gains in physical performance and cognitive  
83 understanding (i.e. academic achievement), to happen in coherence with the development and  
84 use of students' interpersonal skills and their meaningful participation in learning (i.e. social  
85 learning), and to help students increased motivation, self-esteem or self-confidence to learn  
86 (i.e. affective learning) (Bailey et al., 2009; Casey & Dyson, 2009; Hilke, 1990; Metzler,  
87 2011). Taking this stance, and by drawing on the extensive empirical evidence in general  
88 education, Cooperative Learning is a model that could be said to effectively promote the  
89 achievement of student learning in the physical, cognitive, social and affective domains – at  
90 least in general education. The question that concerns this review of literature is can  
91 Cooperative Learning achieve these selfsame learning outcomes in physical education?

92         Since the early empirical work in physical education by Dyson and Strachan (2000),  
93 there has been an increase in the international breadth and scope of research in this area.

94 Drawing on research from eight international countries, and the subsequent conclusions made  
95 from pedagogical research in the last decade, Casey and Dyson (2012) believed that  
96 Cooperative Learning considers human movement to be “something which is undertaken  
97 within a cooperative relationship with others” (p. 173). In contrast to traditional pedagogical  
98 practices, Cooperative Learning acknowledges that “teaching as telling is no longer  
99 appropriate” (Lieberman & Pointer-Mace, 2008, p. 226) and that movement and learning  
100 about movement does not occur in isolation from the cognitive, social, or affective domains  
101 (Casey & Dyson, 2012; Dyson, 2001; Lafont, Proeres, & Vallet, 2007). Through Cooperative  
102 Learning young people learn about movement in physical activity contexts and understand  
103 how their experiences are relevant, meaningful, and transferable, by working together to learn  
104 without direct instruction from the teacher (Bähr & Wilbowo, 2012). Students are encouraged  
105 to interact with each other and learn from the experiences that they create (Dyson, Griffin, &  
106 Hastie, 2004).

107 Moving Metzler’s (2011) interpretation of Cooperative Learning forwards, Casey and  
108 Dyson (2012) recently positioned Cooperative Learning as a pedagogical model due to its  
109 ability to meet the legitimate learning outcomes of physical education by exploring the  
110 interrelation between teaching, learning, content, and context. Reinforcing Dyson and  
111 Grineski (2001) and Dyson and Rubin’s (2003) earlier arguments, Casey and Dyson (2012)  
112 considered learning in the physical, social, cognitive, and affective domains, and the  
113 interrelation of the four concepts of pedagogy, to occur as a result of teachers’ use of five  
114 fundamental elements (positive interdependence, individual accountability, group processing,  
115 promotive face-to-face interaction and small group and interpersonal skills). While  
116 Cooperative Learning was developed along four separate lines in education by its  
117 protagonists Johnson and Johnson, Slavin, Kagan, and Cohen (who all hold differing  
118 perspectives as to what elements and structures support group work and enhance

119 achievement) physical education has followed Johnson and Johnson's (1991) conceptual  
120 approach where the five fundamental elements define group work (Goodyear, 2013). Perhaps  
121 influenced by Dyson's earlier application of the conceptual approach, these five elements  
122 have been positioned as a central pentagonal scaffold, which supports, facilitates, and  
123 deepens the achievement of the four learning outcomes (i.e. physical, social, cognitive, and  
124 affective) of physical education (Dowler, 2012; Dyson & Strachan, 2000; Lafont, 2012).

125         Despite the positioning of models (Kirk, 2013; O'Sullivan, 2013) as a central facet of  
126 the possible future of physical education and the publishing of a number of reviews on other  
127 models (Sport Education and Teaching Games for Understanding), Cooperative Learning has  
128 yet to be acknowledged as having anything but a beginning literature in physical education  
129 (Barrett, 2005). The only comparable review of its kind was conducted by Stanne, Johnson,  
130 and Johnson (2000) who, in exploring the effect of cooperative, competitive, and  
131 individualistic learning in kinesiology, suggested that Cooperative Learning brought about  
132 gains to students' motor performance, social support, interpersonal attraction, and self-  
133 esteem. Yet in physical education there is no analysis of the literature that seeks to ascertain  
134 whether Cooperative Learning can bring about these learning outcomes and indeed fulfill the  
135 physical, cognitive, social, and affective learning outcomes of the subject.

136         In order to legitimize Cooperative Learning as a current and future pedagogical  
137 practice, we need to move beyond the notion that Cooperative Learning 'works' and start to  
138 think of the future directions for research in this area (Casey, 2014). Certainly we need a  
139 comprehensive understanding of if and how Cooperative Learning provides the right  
140 pedagogical circumstances for achieving the educational beneficial learning outcomes of  
141 physical education. In doing so, and as this review sets out to achieve, we can begin to  
142 ascertain the 'worthiness' of Cooperative Learning within a models-based approach and

143 begin to conceptualize directions for future research that could enhance and strengthen  
144 teaching and learning in physical education.

145 **Methodology of review**

146 Shulruf (2010) held that the purpose of any systematic review of literature is to  
147 “examine the material pertaining to a particular area” (p. 596). The key difference between a  
148 systematic approach and a traditional descriptive or narrative review is that it uses methods  
149 that allow the researchers to control potential methodological biases (Shulruf, 2010). This  
150 approach acknowledges the body of research that exists and seeks to draw synthesis from the  
151 findings while acknowledging and accounting for researcher bias (Barr, Hammick, Koppel, &  
152 Reeves, 1999; Boaz, Ashby, & Young, 2002).

153 In seeking to undertake a systematic review of the empirical literature pertaining to  
154 the use of Cooperative Learning in physical education we chose to follow Shulruf’s (2010)  
155 five methodological steps. In what follows we show how we adhered to these steps and the  
156 processes we undertook in completing this review

157 1. *Focus on a specific question:* “How has the empirical research in the use of  
158 Cooperative Learning in physical education reported on the achievement of learning in the  
159 physical, cognitive, social and affective domains (or their equivalents)?”

160 2. *Use a protocol to guide and plan the processes to be followed:* The basis of this  
161 paper is a consideration of peer-reviewed, empirical research into teachers’, pre-service  
162 teachers’, and K12 and higher education students’ experiences of Cooperative Learning in  
163 physical education and physical activity contexts.

164 3. *Identify as much of the relevant literature as possible through a comprehensive*  
165 *search:* Papers were selected by searching EBSCO databases and the Physical Education  
166 Index with the main search term being “Cooperative Learning Physical Education”.  
167 Secondary searches were completed using the main search term “Cooperative Learning” as



168 sub categories of “physical education”, “physical activity” and, “movement”. Physical  
169 activity and movement contexts were selected as related terms to further the scope of studies  
170 found that reported on Cooperative Learning in physical education but to also use physical  
171 activity and other movement related contexts to inform physical education literature. After  
172 this initial search papers were analyzed for suitability. Further journal articles were obtained  
173 through the citations and references in the originally discovered documents.

174 *4. Make decisions about the inclusion and exclusion of studies based on*  
175 *methodological criteria:* All potential papers were scanned to ensure they met the inclusion  
176 criteria. The only studies contained within the present review were empirically-based,  
177 interventional, peer-reviewed papers written in English. Purely descriptive papers or  
178 dissertation abstracts were not considered. In this way, even though some papers represented  
179 data they were excluded from the final review if they did not represent the intervention or  
180 discuss the methods of analysis. This included several peer-reviewed professional papers in  
181 journals such as Physical Education Matters. Furthermore, papers were also excluded if they  
182 reported on cooperative games rather than Cooperative Learning. Cooperative games do not  
183 necessitate the use of the five fundamental elements, but instead suggests that students should  
184 be dependent on one-another to learn (Dyson & Grineski, 2001; Grineski, 1996). Thus,  
185 cooperative games are pedagogical practices that differ to the Cooperative Learning model.  
186 In the end twenty-seven papers were identified that satisfied the selection criteria.

187 *5. Synthesis research findings and being explicit and transparent:* Analysis of the  
188 twenty-seven papers followed a systematic process of inductive analysis and constant  
189 comparison (as per the protocols recommended by Denzin and Lincoln (1994) and Lincoln  
190 and Guba (1985)). We firstly read through each paper to confirm its initial inclusion in the  
191 review. Once this was done we independently read the paper again and coded the papers “to  
192 make the task of analysis more straightforward by sifting relevant material from a large body

193 [of writing]” (Potter 2009, p. 615). These coded sections were transcribed and affixed with  
194 preliminary notes about their nature and interest. The selection of codes was inclusive at this  
195 stage. Coding then became a cyclical process and new understanding brought both of us back  
196 to previously read material with fresh understanding (Potter, 2009).

197         The initial codes and notes were ‘cut and pasted’ so that “all (or a subset of) the data  
198 on a given theme could be put together” (Lee & Fielding, 2009, p. 537). We then compared  
199 the separate bodies of codes and either combined them and placed into wider unnamed  
200 categories (which were also given notes about their nature and interest) or discarded them.  
201 This process was more exclusive as material deemed irrelevant was discounted from the  
202 review. These categories (and their accompanying notes) remained fluid until such time the  
203 themes of this review were consolidated through the process of inductive analysis undertaken  
204 by the authors. Throughout, and to help *manage bias* and increase the *trustworthiness* of  
205 these findings, we made all key decisions together (Kitchenham, 2004).

206         The analysis of the twenty-seven papers revealed four key findings/themes pertaining  
207 to the physical, cognitive, social, and affective domains: (a) Academic Learning (this theme  
208 contains findings related to the physical and cognitive domains), (b) Social Learning, (c)  
209 Team Participation (both themes (b) and (c) related to findings around the social domain),  
210 and (d) Affective Learning (explores reported findings in the affective domain). Each of these  
211 themes will be discussed in relation to their respective learning domain(s) in the results  
212 section.

### 213 **Trends and Limitations**

214         Before discussing the results it is worth noting some common trends and some  
215 potential limitations with the studies undertaken to date on Cooperative Learning in physical  
216 education. The literature surrounding the development of student learning in physical,  
217 cognitive, social, and affective domains, while diverse (i.e. studies from nine countries

218 feature in this review) seem to predominantly focus on work from the USA, the UK and  
219 France. Furthermore, this body of research mostly centers on answering the question “does it  
220 work” rather than asking what the benefits to learners and their learning might be over time.

221 In his consideration of the potential futures for physical education Kirk (2010),  
222 drawing on the work of Ennis (1999), held that any continuation of units of work lasting  
223 between four and six lessons (that is inherent within multi-activity curriculum) does not allow  
224 learning to progress beyond the elementary level. In other words, students are only  
225 introduced to new movement skills, tactics and techniques and are afforded limited time to  
226 become fluent in their movement capabilities. However, short lesson units remain particularly  
227 evident in pedagogical models, despite a growing body of research that suggests it takes  
228 multiple units for students to learn how to learn in this way (cf. Casey, 2014; Goodyear,  
229 2013; Hastie et al., 2011; Harvey & Jarrett, 2013). Indeed six papers in this review explored  
230 the use of Cooperative Learning across units lasting six lessons or less, while a further six  
231 studies explored learning within units of less than ten lessons. The emphasis on short studies  
232 is a limitation of both in this review and the wider research in Cooperative Learning.  
233 However, it also suggests that Cooperative Learning (like other pedagogical models - see for  
234 example Harvey and Jarrett’s (2013) review of Games Centred Approaches) has often found  
235 a place to exist only within a wider multi-activity curriculum.

236 Given the reported importance of the five elements of Cooperative Learning (c.f.  
237 Dyson & Casey, 2012; Johnson & Johnson, 2009) it is surprising to note that only six of the  
238 twenty-seven papers made deliberate reference to how the five elements were actualized in  
239 the teaching of the units of work. However, while the majority of papers did not report on the  
240 five elements over half of the papers (17 out of 27) identified the structure that was  
241 implemented. Since Dyson and Grineski (2001) argued that Cooperative Learning structures  
242 support the fulfillment of the elements, by providing ways of organizing students for

243 interaction, it could be argued that these papers at least sought to use the five elements.  
244 Nonetheless, and building on the work of [masked for peer review] and [masked for peer  
245 review], in the majority of papers the reader was left to accept the author(s) word that  
246 Cooperative Learning had been used. Moreover, twenty-one of the twenty-seven papers  
247 offered no explanation as to how the teacher(s) had maintained “curriculum fidelity” (Zhu,  
248 Ennis, & Chen, 2011) with the model. In contrast all papers gave some details about the  
249 number, age, and prior experience of participants although the level of detail (especially  
250 around teacher(s) experiences of using Cooperative Learning varied from paper to paper.

251 The study by Dyson, Linehan, and Hastie (2010) stands out in this review as the  
252 exemplarily paper because of its diligence in presenting evidence to the reader in each of  
253 these categories. It provided explanations and details on the inclusion of the five elements  
254 and the structure used, it sought to show how fidelity with the model was maintained, it gave  
255 details of the participants and their prior experience, and the paper engaged with the model  
256 for an extended six-month period. Moving forwards beyond this review, this approach taken  
257 by Dyson et al. (2010) should serve as a potential yardstick for future studies on Cooperative  
258 Learning in physical education.

## 259 Results

260 The primary focus of the majority of school-based empirical research on the  
261 Cooperative Learning model in physical education has explored student learning (Cohen &  
262 Zach, 2012). In different cultural contexts and settings (K12 and higher education),  
263 Cooperative Learning was reported to have an impact on students’ physical competence,  
264 cognitive understanding, social skills, and their affective development (Goodyear & Casey,  
265 2013). Indeed, on a number of occasions the learning outcomes were interrelated, whereby  
266 academic and social learning were seen and positioned as being on a par with one-another  
267 (Casey, Dyson, & Campbell, 2009). For example, Lafont (2012) suggested that as students’

268 progressed their communication skills (social learning) so their understanding of the motor  
269 skills also improved (academic learning). Furthermore, and as a consequence of improved  
270 communication with each other, improvements in motor performance and the tactical choices  
271 were reported to have occurred. Additionally, students reported that their throwing and  
272 catching skills were enhanced due to heightened levels of confidence, enjoyment, and self-  
273 esteem, developed as a result of receiving feedback and encouragement from members of  
274 their team (Dyson, 2001).

275       The mechanisms used to make judgments about student learning varied between  
276 studies. Overall there was a balance between qualitative and quantitative data procedures, yet  
277 most judgments were made using qualitative methods (14 studies) rather than quantitative (11  
278 studies) or mixed method designs (2 studies). Furthermore, it was only the quantitative  
279 studies that compared student learning to a control group (11 studies). Subsequently, over  
280 half of the judgments about student learning were not compared to other learners practicing in  
281 a different pedagogical approach to Cooperative Learning (16 studies).

282       One of the broadest, albeit anecdotal, findings of this review was that teachers  
283 believed that student learning progressed in each of the four domains. Furthermore, teachers  
284 believed that this learning surpassed that achieved in the traditional pedagogical approaches  
285 (i.e. skills and drills) used prior to using Cooperative Learning. However, as we explore the  
286 four themes: (a) Academic Learning, (b) Social Learning, (c) Team Participation, and (d)  
287 Affective Learning – it becomes clearer that empirical support for this anecdotal evidence  
288 ranges between the strong and the tenuous.

### 289 *Academic Learning*

290       In exploring this theme we aim to show how learning in the physical and cognitive  
291 domains has been reported. Primarily we suggest that academic learning has been positioned  
292 as either physical development (often in the form of skill and technique improvement) or

293 cognitive development (often in the form of increased tactical understanding and/or improved  
294 decision making). Focusing on academic learning allows us to explore Cooperative  
295 Learning's reported ability to enhance learning in these two domains.

296       A central feature of physical learning was enhanced game performance and  
297 improvements to students' motor skills. Quantitative (3 studies), Qualitative (4 studies) and,  
298 mixed method designs (2 studies) reported on the improvements made by students in this  
299 aspect of physical education (Barrett, 2005; Casey et al., 2009; Darnis & Lafont, 2013;  
300 Dyson, 2002, 2001; Dyson et al., 2010; Dyson & Strachan, 2000, 2004; Lafont et al., 2007).  
301 Specifically, the literature showed that the use of Cooperative Learning enhanced the  
302 intensity of game play and/or physical activity. Cooperative Learning created more  
303 opportunities for passing and shooting, enhanced students' use and understanding of complex  
304 tactics, and simply provided time for students to have more 'goes' at different activities.  
305 Moreover, students' ability to accurately replicate skills, both in games and activities such as  
306 track and field athletics, was also enhanced. With regard to cognitive learning several studies  
307 showed that students had an enhanced game related understanding of strategies, skills, and  
308 the transfer of these to other activities (Casey, 2013; Casey & Dyson, 2009; Dyson, 2002;  
309 Dyson et al., 2010; Dyson & Strachan, 2004, 2000; Hastie & Casey, 2010; O'Leary &  
310 Griggs, 2010).

311       One of the core reasons for enhanced academic learning was identified as being the  
312 increased opportunities to talk. Discussions and the time for promotive face-to-face  
313 interaction afforded students the opportunity to problem solve and in engage in higher-order  
314 thinking (Casey, 2004; Darnis & Lafont, 2013; Dyson & Strachan, 2004; Gossett & Fischer,  
315 2005; Hastie & Casey, 2010). Interactions become promotive of the learning outcomes and  
316 focused on the task rather than being mundane and focused on anything and everything but  
317 the task (Smith & Parr, 2007). Darnis and Lafont (2013) summarized this key finding when

318 they suggested that cooperative groups discussions about their strategies for games led to  
319 improved motor and tactical skills.

320 **Therefore, this theme has shown that Cooperative Learning develops academic**  
321 **learning through the physical and cognitive learning domains. Students acquire a level of**  
322 **physical competence and develop an understanding of movement techniques and tactics as a**  
323 **consequence of engaging with Cooperative Learning; most specifically (but not exclusively)**  
324 **because of the time that was given to promotive face-to-face interaction.**

### 325 ***Social Learning***

326 In agreement with Casey et al.'s (2009) argument that Cooperative Learning places  
327 academic and social learning on an equal par, and Metzler's (2011) discussions around the  
328 achievement and process orientated nature of the model, social learning was frequently  
329 mentioned as a learning outcome. The outcomes that represented social learning included, (a)  
330 the development in interpersonal skills, (b) interpersonal relations and the ability to listen to  
331 team members, and (c) beliefs, the sharing of ideas, and constructing new understandings  
332 together (Casey, 2013; Casey et al., 2009; Casey & Dyson, 2009; Dyson, 2001, 2002; Dyson  
333 & Strachan, 2000, 2004; Goudas & Magotsiou, 2009). Significantly, these were all reported  
334 to occur in conjunction with the gains in academic achievement. For example, developments  
335 in physical performance were frequently attributed to receiving feedback and encouragement  
336 from peers (Barratt, 2005; Casey, 2004; Dyson, 2001, 2002; Dyson et al., 2010; Goodyear,  
337 Casey & Kirk, 2012).

338 However, social learning was not just about the ability to cooperate with one another,  
339 work together as a team to learn, or developing good social relations, although these were all  
340 **evident in the findings** (Andre, Louvet, & Deneuve, 2011, 2013; Bayraktar, 2011; Casey,  
341 2013; Casey et al., 2009; Casey & Dyson, 2009; Dyson, 2001, 2002; Dyson & Strachan,  
342 2000, 2004; Goudas & Magotsiou, 2009; Hastie & Casey, 2010). Social Learning was also

343 about showing care, concern, empathy, and respect for each other, supporting and  
344 encouraging one another to learn (Bayraktar, 2011; Casey et al., 2009; Dyson, 2001, 2002;  
345 Dyson & Strachan, 2000; Goudas & Magotsiou, 2009; Johnson, Bjorkland, & Krotee, 1984;  
346 Yoder, 1993). For example, Goudas and Magotsiou (2009) found that **as students increased**  
347 **their cooperative skills and their empathy for their teammates students' quick temperedness**  
348 **and their tendency to disrupt decreased**. Yet while the development in all of these social skills  
349 supported academic achievement these skills took time to develop. Although there is no  
350 definitive figure for this, with different students adapting at different speeds, Casey et al.  
351 (2009) suggested that it took the **initial few lessons and the first few weeks** of a unit before  
352 students were comfortable working in their groups and could begin cooperating with each  
353 other.

354 One of the reasons cited for **students' ability to cooperate and show empathy and**  
355 **respect for their teammates was the developing leadership skill set of the students (Darnis &**  
356 **Lafont, 2013; Dyson, 2001; Dyson & Strachan, 2000)**. Specifically enhanced leadership skills  
357 **were seen through students' ability to guide their teams through a process of learning, their**  
358 **ability to take responsibility for their own and other individuals learning, enhanced**  
359 **communication skills, and in particular, the ability to listen and speak clearly (Casey, 2004;**  
360 **Darnis & Lafont, 2013; Dyson, 2002, 2004; Dyson & Strachan, 2000; O'Leary & Griggs,**  
361 **2010)**. O'Leary and Griggs (2010, p. 78) account of learners in a higher education setting  
362 provides an example of the developing leadership skill set of students:

363 Listening to others, accepting the beliefs of the home-group members and  
364 potentially developing ideas for the required sequence. Moreover, a number of  
365 students felt that the responsibility of listening to their peers developed their  
366 cognitive learning in terms of remembering what they had been taught and  
367 understanding the material better



368 While social learning was most obviously reported in the interaction between  
369 students, much of what occurred was embedded in team interaction. However, given the  
370 prevalence of both Dyson and Grineski's (2001) learning teams structure (it featured in  
371 eleven out of the twenty-seven studies) and Aronson, Blaney, Stephan, Sikes, and Snapp  
372 (1978) Jigsaw Classroom structure (featuring in four studies) coupled with the clear emphasis  
373 on games lessons (fourteen out of the twenty-seven studies used games as their context of  
374 choice), it is unsurprising to discover that team participation made up the majority of the  
375 reports about social learning.

### 376 *Team Participation*

377 Through the use of the Cooperative Learning structure learning teams (and the  
378 argument that Cooperative Learning structures support the fulfillment of the elements (Dyson  
379 & Grineski, 2001)) it was foreseeable that a large number of the studies were reporting on the  
380 impact of some of the five elements on learning. Positive interdependence (often  
381 implemented through student roles inherent within learning teams (Dyson, 2001, 2002;  
382 Goodyear et al., 2012, 2013)) and individual accountability (often implemented through  
383 member signatures, peer feedback, constant monitoring and interactions by the teacher and  
384 tick sheets to record performance (Dyson et al., 2010)) both supported active participation.  
385 Engagement was supported, since students were required to take responsibility for team  
386 learning and organizing themselves as a team (Dyson, 2001, 2002; Dyson & Strachan, 2000,  
387 2004; Goodyear et al., 2012, 2013; O'Leary & Griggs, 2010) becoming, as Hastie and Casey  
388 (2010, p. 18) suggested, "self managers". Significantly, students saw themselves as more  
389 than just performers and felt that they had a wider responsibility to the group. Dyson and  
390 Strachan (2000) observed that "even during illness students participated in non-active roles,  
391 acting as coach for the day, coordinating the implementation and refinement of game  
392 strategy" (p. 28).

393 As students became increasingly used to the Cooperative Learning environment,  
394 active participation was further developed. Students were on task for the majority of lesson  
395 time (Dyson et al., 2010; Dyson & Strachan, 2004; Goudas & Magotsiou, 2009; O’Leary &  
396 Griggs, 2010) and became increasingly less dependent on the teacher and more dependent on  
397 each other. Subsequently, as units progressed students spent increasingly more time in  
398 learning tasks working together to learn without waiting for instructions from the teacher  
399 (Casey, 2013; Casey & Dyson, 2009; Dyson, 2001, 2002; Dyson et al., 2010; Dyson &  
400 Strachan, 2000, 2004). Students motivated and encouraged each other to learn, accepting and  
401 supporting the idea that all students had a role to play in each other’s learning. Significantly,  
402 this involved the inclusion of those with learning difficulties and those who often disengage  
403 themselves from lessons, such as disaffected girls (Andre et al., 2013, 2011; Bayraktar, 2011;  
404 Casey, 2013; Casey et al., 2009; Goodyear et al., 2012, 2013; Dyson, 2002, 2001; Dyson &  
405 Strachan, 2000, 2004; O’Leary & Griggs, 2010; Polvi & Telama, 2000).

#### 406 *Affective learning*

407 While academic and social learning were the most frequently reported learning  
408 outcomes, affective learning was rarely considered. Drawing on the work of Bailey et al.  
409 (2010), Kretchmer (2005), and Pope (2005) we suggest that affective learning in physical  
410 education and sport pedagogy is largely associated with psychological components of self-  
411 confidence, self-esteem, motivation, and self-worth. Yet within models-based practice  
412 (Metzler, 2011) and in the studies reporting on the learning outcomes of Cooperative  
413 Learning in this paper, affective learning was used an umbrella term to describe both social  
414 and psychological aspects of learning. For example, Dyson (2002) argued that affective  
415 learning developed but in positioning this form of learning he drew mainly on social learning  
416 outcomes, such as cooperation and students ability to encourage each other.

417           A further explanation for the lack of empirical research on the affective domain is that  
418 the purpose of most studies was to explore how students improved their performance,  
419 developed their cognitive understanding, and enhanced their social learning. Affective  
420 learning was rarely noted as a prominent feature of investigation. These limited accounts of  
421 the ‘psychological’ aspect of learning, and the perhaps misleading evidence exploring the  
422 psychological aspects of learning, seem to highlight Pope’s (2005) argument that affective  
423 learning is somewhat challenging to define due to its subjective and personal nature.

424           Nevertheless, while there was limited evidence reporting on the affective domain  
425 many of the studies did suggest that students increased in self-confidence, self-esteem, and  
426 motivation (c.f. Goodyear & Casey, 2013; Goodyear et al., 2012). In their work exploring  
427 girls’ engagement in physical education Goodyear et al. (2012) made an attempt to separate  
428 the social and affective domains by suggesting that social and cognitive learning had an  
429 influence on students motivation and engagement. This study showed that girls who had  
430 previously disengage from traditional forms of physical education became more motivated to  
431 learn when they were afforded the opportunity to participate in promotive face-to-face  
432 interactions and when they could analyze, evaluate, and provide feedback on their peers’  
433 performance. Similarly, those students that were described as often being enthusiastic  
434 learners in traditional lessons became more motivated during Cooperative Learning when  
435 they could lead their team through learning tasks and create physical movement tasks to  
436 develop their team’s game performance. Consequently, Goodyear et al. (2012) provide an  
437 example as to how the social learning domain differs to the affective domain and they show  
438 how social and affective learning might also be seen on par with one another. However, on a  
439 cautionary note, this example, coupled with a number of other statements pertaining to self-  
440 confidence, self-esteem, or motivation rely on teachers’ and students’ subjective

441 interpretation of learning and improvements (Dyson et al., 2010; Dyson & Strachan, 2000;  
442 2004; Goudas & Magotsiou, 2009; Polvi & Telama, 2000; Lafont et al., 2007).

443         Exceptions to the somewhat subjective interpretations of affective learning came from  
444 the work of Cohen and Zach (2012) and Wang (2012). Cohen and Zach (2012) used the  
445 ‘physical education teaching self efficacy questionnaire’ as a measure of determining pre-  
446 service teachers’ self-efficacy. These authors suggested that self-efficacy was in fact higher  
447 when the pre-service teacher used a ‘traditional approach’. Similar to Casey’s reports on  
448 teachers’ use of pedagogical models (Casey, 2014), and more specifically teachers’ use of  
449 Cooperative Learning (c.f. Casey and Dyson, 2009; Casey et al., 2009), Cohen and Zach  
450 (2012) suggested that pre-service teachers had a lower self-efficacy since they were using  
451 Cooperative Learning for the first time. Indeed, pre-service and in-service teachers often feel  
452 out of their comfort zone when learning to teach in a new way (Casey, 2014) where the lower  
453 self-efficacy can be associated with teacher learning to teach in a new way.

454         Moving beyond the exploration of the affective domain in relation to pre-service  
455 teachers, Wang (2012) used the ‘achievement motivation scale’ to explore the affective  
456 learning of students in higher education as learners within Cooperative Learning. Wang’s  
457 (2012) study showed that students who experienced Cooperative Learning had greater  
458 achievement motivation. Wang (2012) suggested that the increase in achievement motivation  
459 during Cooperative Learning could be interrelated with learners’ higher self-efficacy,  
460 successful experiences, group goals, and positive peer relations.

461         In taking Wang’s (2012) increase in achievement motivation a step further, and by  
462 drawing on Deci and Ryan (2000), it seems reasonable to suggest that there was an increase  
463 in achievement motivation since students were, broadly speaking, intrinsically and  
464 extrinsically motivated. While this is a conceptual link, and it is important to note that  
465 Wang’s (2012) study did not detail the elements or the structure of Cooperative Learning, this

466 finding combines with both Johnson and Johnson's (2009) and Slavin's (1996) perspectives  
467 on Cooperative Learning. Indeed, Johnson and Johnson (2009), whose work is very much  
468 based on Deutsch's (1949) social interdependence theory, suggest that increased effort to  
469 achieve is associated with interrelated learning goals between group members. These goals  
470 provide learners within an internal drive to help their peers to learn, and subsequently, their  
471 team to achieve. In contrast, Slavin (1996) argued that Cooperative Learning methods that  
472 rely solely on student interaction could not predict higher student motivation. Slavin (1990)  
473 claims that in order to for students to be motivated and engaged within the learning tasks  
474 individuals and team members should be given rewards for their learning. Therefore, Wang's  
475 (2012) study is the first within physical education to provide an indication that both Johnson  
476 and Johnson's (2009) and Slavin's (1996) perspectives need to be considered with regard to  
477 the affective domain. The findings from Wang (2012) suggest that positively interrelated  
478 goals and individual/team rewards can promote students' motivation by satisfying learners'  
479 needs, that is, autonomy, competence and relatedness (c.f. Deci & Ryan, 2000).

480 This section has shown there is limited evidence and empirical examples of affective  
481 learning within Cooperative Learning in physical education. However, the emerging findings  
482 do suggest Cooperative Learning can support this learning domain and the findings warrant  
483 further exploration of affective learning in K-12 education.

#### 484 **Discussion**

485 We set out from the start of this paper to answer the methodological question "how  
486 has the empirical research in the use of Cooperative Learning in physical education reported  
487 on the achievement of learning in the physical, cognitive, social and affective domains (or  
488 their equivalents)?" The simple answer is that the empirical research shows that Cooperative  
489 Learning reports on the achievement of learning in all four learning domains in physical  
490 education. It reports predominantly, and most robustly, on physical, cognitive, and social

491 learning while offering a succession of anecdotal examples that indicate that the model  
492 facilitates learning in the affective domain.

493         At a deeper and more critical level, this review of literature suggests that were  
494 Cooperative Learning receiving an interim school report it would be told that while it had  
495 enjoyed a promising start in physical education it still had much to prove. Although most of  
496 the studies did suggest that learning in each domain was strengthened there were certainly  
497 limitations in the approach of each study. Most particularly there was the brevity of many  
498 interventions (less than six weeks in some cases) and the lack of a report on the researchers'  
499 attempts to maintain fidelity to the model. As Casey (2014) surmised, we would argue that  
500 while we know 'it works', we do not know (a) to what degree it works over time, and (b)  
501 what the full potential of the model is when fidelity is maintained.

502         Kirk (2012, 2013) has positioned models as the medium (~10 years) and longer-term  
503 (~20 years) future of physical education and yet we know little about the effects of the  
504 longitudinal use of the model. Casey (2013) and Dyson and Strachan (2004, 2000)  
505 respectively are the only researchers to publish studies that report on sequential learning and  
506 learning over time. Through these studies we begin to understand that student learning in the  
507 four domains was advanced and deepened, but again this only explored learning over a two  
508 year period; nothing near the extent of the mid or even longer term future that Kirk has talked  
509 about. As Rovegno (2008, p. 92) suggests, "we are only beginning to unpack the complexity  
510 of these learning environments", and therefore it seems imperative that we investigate the  
511 longitudinal use of pedagogical models and learn what happens when models are used over  
512 extended periods of time.

513         In light of these discussions, important questions are raised about the 'real-life'  
514 impact of short units of Cooperative Learning (i.e. 10 lessons or less) and the potential of the  
515 model if longer interventions were to become the norm (as in the instances of Casey and

516 Dyson and Strachan respectively (see above)). As these authors reported the biggest impact  
517 on learning occurred when students had learnt to learn through Cooperative Learning, it  
518 serves the field to know more about the learning outcomes that result from sustained use of  
519 the model. Furthermore, while the affective domain may have received a lack of attention due  
520 to the impersonal and subjective nature of this form of learning (Pope, 2005), we would also  
521 argue that learning in this domain takes time to develop. This claim has plausibility when you  
522 consider that most studies reviewed reported that the three other learning domains were  
523 developed: even in shorter units (lasting 12-14 lessons or less) and when they were not the  
524 prominent feature of investigation.

525         In considering ‘how’ we might explore the affective domain, methods that did provide  
526 an understanding of affective learning were both interviews and standardized measures, such  
527 as the physical education teaching efficacy questionnaire (Cohen & Zach, 2012).

528 Subsequently, we argue that understanding affective learning is both possible and desirable  
529 and we call for further research that explores learning within this domain over time. Yet in  
530 reiterating Bailey et al. (2009), in order to define and understand the authentic impact of this  
531 learning domain, it also seems reasonable to suggest that further research into affective  
532 learning in physical education more generally is also required, particularly when valuing the  
533 physically active life and motivation are the subject’s *raison d’etre* (Kirk, 2012).

534         In further considering future research agendas, we argue that research should further  
535 explore the impact of Cooperative Learning structures (i.e. Jigsaw, learning teams, pairs-  
536 check-perform c.f. Dyson & Grineski, 2001)) on learning in the four domains. Certainly, one  
537 of the advantages of Cooperative Learning is that there are hundreds of structures that allow  
538 teachers to vary the way students access academic content and interact with one another in  
539 order to learn (Goodyear, 2013; Kagan & Kagan, 2009). Yet while Cooperative Learning  
540 affords such variability, this review has shown that the structure of learning teams (Dyson &

541 Grineski, 2001) has been the dominant structure applied and we know little about how other  
542 structures impact students' learning.

543 Exploring the Cooperative Learning structures becomes even more significant when  
544 we consider that physical education has followed Johnson and Johnson's conceptual  
545 approach (Goodyear, 2013). Indeed, learning teams has great synergy with Johnson and  
546 Johnson's (2009) structure learning together. As a result the principles of team rewards, the  
547 use of multiple structures in lessons and, group accountability (principles respectively  
548 suggested by Slavin (1995, 1996), Kagan and Kagan (2009), and Cohen (1994) to maximise  
549 achievement) have rarely been explored. By expanding the way Cooperative Learning is  
550 implemented through the use of structures such as Student Teams Achievement Division,  
551 Numbered Heads together, and Think-Share-Perform (that to some extent embody these  
552 somewhat unexplored principles in physical education (Kagan & Kagan, 2009; Slavin,  
553 1996)), a further understanding around the essential elements or non-negotiable (c.f.  
554 Goodyear, 2013) features of Cooperative Learning that maximise learning in the four  
555 domains might be understood. Subsequently, we suggest a need for further research around  
556 the Cooperative Learning structures in physical education.

557 In concluding this review of literature we suggest that Cooperative Learning is a  
558 model that can contribute to achieving the legitimate learning outcomes of physical education  
559 (Bailey et al., 2009; Kirk, 2012, 2013). However, a key limitation in our understanding of the  
560 model is that we know little about what happens beyond the initial unit of work (Casey, 2011;  
561 Goodyear & Casey, 2013). Subsequently, in order to understand Cooperative Learning as a  
562 pedagogical model, further research is required on students' learning, teachers' use of a  
563 model, the Cooperative Learning structures, and how the school contextual factors constrain  
564 or facilitate teachers' use of a model "beyond the honeymoon of pedagogical renovation"  
565 (Goodyear & Casey, 2013, p. 1).



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Manuscript Quest 2014-0017		
Reviewer 1		
Comment	Author Response	Example Text
I would like to commend the authors on an interesting review of the literature on Cooperative Learning within Physical Education. The manuscript certainly raises some important points regarding what we know about the use of Cooperative Learning in Physical Education and provides insight into future direction for research in this area. My comments below serve to guide the authors in possible ways in which the manuscript can be further improved.	Thank you for your kind words, We are very grateful of your guiding comments and feel that your review has allowed us to further develop the paper.	
The author's move between 1st and 3rd points at different points throughout the manuscript and I would suggest picking one and sticking with it.	We have interpreted this comment as a shift in argument from 1 <sup>st</sup> and 3 <sup>rd</sup> person. Subsequently we have maintained a 1 <sup>st</sup> person argument and modified any third person statements. These were noted to mainly occur in the methods section and have been changed from 'the authors' to 'we' where possible.	
Overall you have built a good case for the need for this review by linking it to the future of physical education in model-based practice and achieving the four learning domains in physical education. However, I feel that the last paragraph of this section (lines 124-138) needs to provide a stronger rationale for review based on the case you have made	We have now modified this section on page 6 Line 136-144 to draw the argument back to our original position at the start of the paper surrounding the educational benefits of physical education and the models-based approach as a future pedagogical practice	In order to legitimize Cooperative Learning as a current and future pedagogical practice, we need to move beyond the notion that Cooperative Learning 'works' and start to think of the future directions for research in this area (Casey, 2014). Certainly we need a comprehensive understanding of if and how Cooperative Learning provides the right pedagogical circumstances for achieving the educational beneficial learning outcomes of physical education. In doing so, and as this review

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<p>leading up to this. I suggest really selling the need and importance of this review in this paragraph.</p>		<p>sets out to achieve, we can begin to ascertain the 'worthiness' of Cooperative Learning within a models-based approach and begin to conceptualize directions for future research that could enhance and strengthen teaching and learning in physical education.</p>
<p>There seems to be an overabundance of direct quotes which reads a little more like a dissertation than a manuscript. I suggest cutting down on direct quotes and paraphrasing the author's points instead where appropriate.</p>	<p>Throughout the manuscript we have reduced the number of quotes that were being used and sought to paraphrase the key findings</p>	
<p>Maybe this is just me, but the use of hyphens instead of commas or semi-colons was distracting for me and impacted the flow of my reading. I suggest changing this throughout the document to help with the readability of the manuscript. However, I am not wedded to this suggestion and realize that it may just be a quirk of mine!</p>	<p>The majority of hyphens have been removed. However, where we felt that this kept with the continuity of the sentence these have remained included.</p>	
<p>Methodology</p>		
<p>Overall this section is very detailed but reads a little too much like a dissertation. I suggest pairing this section down so that is it brief yet detailed. At times it seems as though you felt the need to justify your decisions rather than just reporting on your methodology. I suggest just reporting the process you used to locate the research to include in the review (keywords, databases etc), the</p>	<p>This section has been significantly reduced to now focus on the specifics of the methodological approach</p>	

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<p>inclusion and exclusion criteria (this section needs to be reduced. I suggest not including examples of papers that were included and excluded but rather how you decided what to include and exclude), and the process used to synthesize the findings.</p>		
<p>I also suggest including an overall snapshot of the types of research included. It would be important to know if the research was all qualitative, all quantitative, or a mix of both, or if any single subject research was included.</p>	<p>On page 12 line 274-280 we have summarised the types of research that were included within this data set.</p>	<p>The mechanisms used to make judgments about student learning varied between studies. Overall there was a balance between qualitative and quantitative data procedures, yet most judgments were made using qualitative methods (14 studies) rather than quantitative (11 studies) or mixed method designs (2 studies). Furthermore, it was only the quantitative studies that compared student learning to a control group (11 studies). Subsequently, over half of the judgments about student learning were not compared to other learners practicing in a different pedagogical approach to Cooperative Learning (16 studies).</p>
<p>This information would help to situate the synthesis of the findings. I find the process you used to synthesize the research findings to be interesting but am not sure of the fit of these techniques to the literature review process. I would recommend explaining your choice of using these techniques as they are not typical for a review of literature process. It seems to me that you conducted a thematic approach to synthesizing the literature</p>	<p>In re-reading and revising the methodology section we feel that this reflects the processes that we undertook. We hope that the development of the paper and the tightening of this section will help you to see what we did and why.</p>	

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<p>based on the outcomes of the research on student learning.</p>		
<p>Results</p>		
<p>At the end of the methodology section you refer to the key findings as themes but change this to sub-themes later in the section. I suggest keeping it as themes throughout the section rather than sub-themes.</p>	<p>Thank you for highlighting this – the change in focus from themes to sub-themes has been modified and the text now only reads themes</p>	
<p>Within the themes it would be helpful to understand if the assertions you make are based on qualitative, quantitative or a mix of both types of research. For example, the first assertion (lines 305-312) is that one of the biggest reported ‘gains’ has been in game performance. Clarifying if these gains were reported in qualitative or quantitative research (or a mix of both) would be helpful.</p>	<p>This sentence has been modified to highlight the types of research that informed this finding</p> <p>We have undertaken this process where possible but on some occasions it was beyond our capabilities without restarting the review from scratch. The findings are inherent in the papers but they also speak of our understanding of the field as a whole. We hope this explanation serves to explain why we have only been partially successful in addressing this concern.</p>	<p>A central feature of physical learning was enhanced game performance and improvements to students’ motor skills. Quantitative (3 studies), Qualitative (4 studies) and, mixed method designs (2 studies) reported on the improvements made by students in this aspect of physical education (Barrett, 2005; Casey et al., 2009; Darnis &amp; Lafont, 2013; Dyson, 2002, 2001; Dyson et al., 2010; Dyson &amp; Strachan, 2000, 2004; Lafont et al., 2007).</p>
<p>Academic Learning: This theme needs further elaboration and development. There is some important information here that is presented but not further developed. Clearly if CL is to promote student learning in the four domains, this section needs to provide the “evidence” that it is indeed doing that and at present falls a little short of that. Further elaboration on how CL promotes Academic Learning and the</p>	<p>Within this section we have sought to expand on the initial points raised. We have highlighted what features of physical and cognitive learning the studies in the review were reporting to occur.</p> <p>We have also included a summary statement to explicitly highlight the key findings that can be drawn from this theme.</p>	<p>The text has been added to various sections within this theme and we have highlighted the changes in red</p>



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<p>credibility of these claims would be helpful here.</p>		
<p>Social Learning: This theme could benefit from further development and elaboration. For example, there needs to be further elaboration of the findings around the development of leadership skills (lines 354-363). Alignment of the quote to the points made could be stronger.</p>	<p>Within this section we have sought to expand on the initial points raised. For example, we have provided examples to the differing forms of social learning that were reported to occur. In reference to developing leadership skills we have sought to explicitly highlight what the studies were suggesting with regard to leadership</p>	<p>The text has been added to various sections within this theme and we have highlighted the changes in red</p> <p>Example of leadership: One of the reasons cited for students' ability to cooperate and show empathy and respect for their teammates was the developing leadership skill set of the students (Darnis &amp; Lafont, 2013; Dyson, 2001; Dyson &amp; Strachan, 2000). Specifically enhanced leadership skills were seen through students' ability to guide their teams through a process of learning, their ability to take responsibility for their own and other individuals learning, enhanced communication skills, and in particular, the ability to listen and speak clearly (Casey, 2004; Darnis &amp; Lafont, 2013; Dyson, 2002, 2004; Dyson &amp; Strachan, 2000; O'Leary &amp; Griggs, 2010).</p>
<p>Team Participation: Again, this theme needs further elaboration and development in places. You make some important and interesting assertions which could benefit from further development.</p>	<p>We haven't elaborated on this section as we felt this was an extended finding of social learning. However, in addressing this point we have included an additional paragraph at the end of the social learning theme to show how these two themes were inter-linked with one another</p>	<p>However, given the prevalence of both Dyson and Grineski's (2001) learning teams structure (it featured in eleven out of the twenty-seven studies) and Aronson, Blaney, Stephan, Sikes, and Snapp (1978) Jigsaw Classroom structure (featuring in four studies) coupled with the clear emphasis on games lessons (fourteen out of the twenty-seven studies used games as their context of choice), it is unsurprising to discover that team participation made up the majority of the reports about social learning.</p>
<p>I would recommend adding a summary</p>	<p>In the process of elaborating on the previous</p>	

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paragraph after the affective learning theme to summarize the findings from the review to help with a transition to the discussion section. What are the take home messages you want the reader to know based on your review?	themes and in order to support coherence with the approach we have expanded on the original points raised within this theme and also included a summary paragraph to highlight the key points before moving into the conclusion.	
Discussion:		
On line 442 you introduce that these findings also come from physical activity contexts but this is not mentioned earlier. Indeed the stated purpose for the review is to consider the use of CL in physical education. Make sure you are consistent here.	On lines 168-171 we have sought to identify why physical activity contexts were included as terms used in the review.  The term physical activity has been removed from the initial paragraph of the discussion to keep the focus being very much on physical education	Physical activity and movement contexts were selected as related terms to further the scope of studies found that reported on Cooperative Learning in physical education but to also use physical activity and other movement related contexts to inform physical education literature.
Overall, the discussion section is well written and provides recommendations for the next steps relative to research on Cooperative Learning in physical education.	Thank you very much for these comments and for all your advice on the paper	
Specific comments	Each of these comments was address in the original document before edits and changes were made. We are hopeful that we addressed each of theme in turn and thank you for your diligence in this very helpful process.	
Reviewer 2		
Comment	Author Response	Example Text
I read this paper with interest and commend the author(s) for undertaking this review of the literature. The author(s) provide an accurate and relevant review of the literature on Cooperative Learning in Physical	Thank you for your comments and support in the review of this paper.	

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Education.		
A greater understanding of the different pedagogical models is warranted as represented by Kirk (2010) and Metzler (2011). This review appears appropriate for publication in QUEST, and could potentially make fine contribution to the existing literature base.	Thanks again. We felt that this was the case but it is reassuring to get such support from the wider field.	
The major strength of the manuscript is the depth of understanding that the author(s) present in this manuscript on Cooperative Learning in Physical Education. The paper demonstrates that they have a far-reaching knowledge of Cooperative Learning as a pedagogical practice. In addition, there is a detailed and comprehensive explanation of the review process.	We have a lot of experience with the model but it is great to have this vindicated in the review process. Thank you.	
I applaud the author(s) review of the Cooperative Learning literature and agree that further research in warranted in what they have defined as the “affective” domain of learning. Future research on different pedagogical practices is necessary and would certainly contribute to the field of research on teaching and learning in physical education.	This was certainly the most anecdotal of themes to emerge from the review.	
Specific manuscript comments:		
The article is generally well written but there are some typos, for example, in the abstract:	We full acknowledge this and the paper has been tightly edited in an effort to remove all of these errors.	
p. 1 Line 12: "for" should be "four"	This has been changed	

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I did not copy-edit this manuscript. I would suggest that the author(s) check and double check that their paper adheres closely to the APA format.	We have paid very particular attention to APA in addition to other efforts to improve the paper.	
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