

How to Promote Social Entrepreneurship on Urban Education? An Active Learning Implementation

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Abstract

This paper analyzes the effects of active learning (AL) on the social entrepreneurship (SE) of physical education teacher education students ($n = 158$) from an Urban School. AL participants applied several strategies including but not limited to flipped classroom, problem solving, team projects, or case studies. The topic was approached using mixed methods with methodological triangulation. Quantitative evidence was gathered through a quasi-experimental design of six non-equivalent groups implementing the *Social Entrepreneurship Competency Scale* (SECS). Meanwhile, qualitative analysis was undertaken analyzing 119 reflective journals. Quantitative results provide significant evidence regarding the positive effect of AL on SE. Qualitative analysis complements this view describing how SE was

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developed (e.g., providing-receiving feedback among peers). Additionally, data transformation displays an alternative analysis of the benefit provided. Our results display how AL improves SE of physical education teacher education students, enhancing new research into this direction to meet current education demands.

Keywords

active learning, social entrepreneurship, physical education teacher education, mixed methods, higher education

The past decade has witnessed a surge of research interest in social entrepreneurship (SE), providing important insights regarding its role in fostering inclusive growth and institutional change (Saebi et al., 2019). The main difference of this entrepreneurial approach, compared to others such as commercial entrepreneurship, is its objective of increasing social value on community (Doherty et al., 2014). The dominant school of thought on SE, the school of social innovation, emphasizes the importance of the entrepreneur as individuals and focuses on defining their distinctive features (Bacq & Janssen, 2011). The predictive validity of entrepreneurial personality traits determines that there is a positive relationship between these traits and the entrepreneurial behavior (Rauch & Frese, 2007). Therefore, knowing how to promote the specific features that define the social entrepreneur is crucial to enhance SE in our society.

Previous studies on SE considered the effects of learning-by-doing methodology in different contexts and applications (Chang et al., 2014); compared the motivation of men and women to participate in SE programs on technology and engineering (Dzombak et al., 2016); analyzed online learning communities as an appropriate methodology for teaching social entrepreneurship (Solórzano-García & Navío-Marco, 2019); contrasted existing differences in terms of gender on a sport development program (Hayhurst, 2014); and explored the pathways to make a difference in the world being a social entrepreneur (Waddock & Steckler, 2016). This field has seen the emergence of several theories and propositions, often based on grounded qualitative research, with few empirical studies existing in this domain (Hockerts, 2017). This situation requires the implementation of new investigations to address the research problem from a quantitative or mixed methods approach. In addition, no previous studies have been found in a literature search that compare the promotion of SE on several courses. Thus, this paper aims to shed light on both issues.

Active learning (AL) is a teaching methodology which challenges students to use creative thinking and decision making to learn, requiring students to apply cognitive skills in complex tasks (Sahin-Taskin, 2018). AL comprises several strategies such as flipped classroom (Killian & Woods, 2018), problem solving (Jones & Turner, 2006), team projects (Woolard, 2018), hands-on technology (Castles, 2018), and self-assessment exercises (Tolgfors, 2018). Previous AL implementations were effective to increase students' performance, engagement, and participation (Swanson et al., 2019), emphasize democratic values (Bergmark & Westman, 2018), and promote metacognitive awareness and cognitive abilities (Pantiwati & Husamah, 2017). Also, AL has previously been used to encourage entrepreneurship education (Cooper et al., 2004; San Tan & Ng, 2006) and social entrepreneurship in business and management education (Siqueira et al., 2015). Although AL stands as a firm opportunity to develop SE, our literature search reveals a lack of studies analyzing its promotion in the field of physical education (PE). Additionally, because PE courses are mainly based on practice exercises, the use of AL to enhance SE in this field is especially pertinent.

Following a similar approach to recent studies, we investigate the effects of AL in PE (Chr  n  n & O'Sullivan, 2016; Killian & Woods, 2018). However, the main goal of this research is the analysis of SE promotion through AL on physical education teacher education students (PETEs). In particular, we focus on this topic because the enhancement of SE in teacher education is important not only to increase social skills and moral values in future teachers, but also to improve global wealth, counteract social crisis, and resolve community problems.

Another significant contribution is made in our research design through the use of mixed methods, being a novel approach in the study of SE (Hockerts, 2017) and Urban Education (Du et al., 2021; Rand, 2021; Salimi et al., 2021). This methodology allows us to analyze the research question from both quantitative and qualitative perspectives.

Materials and Methods

Research Settings

This research was conducted at Morgan State University (USA), a recognized historically black university (HBCU) in Baltimore, Maryland, and was approved by its Institutional Review Board (IRB#18/02-0020). To represent the wide range of fields involved in physical education teacher education, the courses included were PHEC 123 Jogging (123G); PHEC 148 Physical education concepts & evaluation (148G); PHEC 240 Badminton and tennis

(240G); PHEC 358 Measurement and evaluation in health and physical education (358G); and PHEC 498 Organization and administration of physical education (498G), as experimental groups (EG); and PHEC 375 Psychology of teaching and coaching, as control group (CG).

Following a similar approach to previous research (Pantiwati & Husamah, 2017; Sahin-Taskin, 2018; Siqueira et al., 2015), EG students developed course contents applying several AL strategies. Flipped classroom, problem solving, small group and whole class discussions, team projects, hands-on technology, case studies, videos or short demonstrations, essays, and self-assessment activities were implemented. The proportion of each option was defined considering course contents and students' preferences. On the other hand, PETEs from CG completed the course applying traditional teaching methodologies based on lectures, practice sessions, and theoretical-practical exercises. All AL courses as well as CG course were conducted by the same professor.

Variables

The independent variable is the AL teaching methodology applied on PETEs, while the dependent variable refers to their SE.

Design and Data Collection

A convergent parallel mixed-methods design with methodological triangulation was employed, QUAN+QUAL (Creswell, 2014; Creswell & Plano Clark, 2017). The use of this design has been previously supported in research regarding Urban Education (Du et al., 2021; Rand, 2021; Salimi et al., 2021), PETE (Alfrey et al., 2012; Freak & Miller, 2017), SE (Mehta et al., 2016), and the study of AL effects (Galway et al., 2014; Gasiewski et al., 2012). However, our implementation differs from previous research since it performs a data transformation and combines three types of results in the discussion (Creswell & Plano Clark, 2007).

Quantitative evidence was gathered through a quasi-experimental design using six non-equivalent groups, five experimental groups, and a control group, contrasting pre-test and post-test measurements. To assess the dependent variable, the *Social Entrepreneurship Competency Scale* (SECS) was used (Capella-Peris, Gil-Gómez, Martí-Puig, et al., 2020). This tool allows researchers to measure SE considering three categories of features (i.e., personal, social, and innovative) and 17 specific features (i.e., confidence, goal-oriented motivation, ability to take risks, ability to learn and evolve, creativity, offering help and cooperation, social awareness, coexistence and respect for

public affairs, resilience, responsibility, commitment and coherence, ability to create ideas, leadership, initiative, ability to change, belonging to well-informed social networks, an ability to identify opportunities). The analysis was conducted in four levels, in general, by courses, by categories and by features of the SECS.

The qualitative section was undertaken analyzing 119 reflective journals provided by the EG students. Our instrument requested PETEs to perform a self-assessment regarding their class experience, course learning, and personal opinion. These reports were provided voluntarily, at the end of the course, and had no impact on their grades. Individual and collective effects of SE on PETEs were addressed through this tool. Reflective journals allow researchers to analyze educational experiences while maintaining an objective position (Pavlovich, 2007). This tool was used in previous analysis of AL implementations (Bruno & Dell'Aversana, 2018; Clark & Zeegers, 2015) and teacher training and PETE studies (Abednia, 2012; Chiva-Bartoll et al., 2020). Also, similar narrative strategies have been recently used in Urban Education research (Ahi & Sengil-Akar, 2021; Reddick et al., 2021).

Finally, following a similar approach to previous research (Capella-Peris, Gil-Gómez, & Chiva-Bartoll, 2020; Gil-Gómez et al., 2015), we transformed qualitative data into quantitative results. This is a standard procedure of mixed methods research where investigators take the qualitative themes or codes and counts them to form quantitative measures (Creswell, 2014; Creswell & Plano Clark, 2017). To perform data transformation, the number of times each category and feature was mentioned in reflective journals was counted. Those counts were used to calculate the average as well as the percentage of citations for each category and feature. When necessary, percentage scores were normalized to compare categories/features. While the qualitative study assesses the importance and depth of comments from the PETEs, the data transformation shows the frequency with which each category and feature analyzed is cited in the reflective journals. Data transformation analysis provides a complementary view of their discourse, offering a new perspective of AL effects. The analysis was conducted in three levels, in general (i.e., analyzing all data), by course (i.e., evaluating data for each course separately), and by reflective journal (i.e., assessing the records provided for all participants individually).

Hypothesis and Research Question

The specific hypothesis to be tested was *The AL program will produce a significant improvement ($p < .05$) in the SECS results for the EG compared with the CG*. Furthermore, the main question needing a response in this research is

Table 1. Demographic Information for All Research Groups.

Group	N (male - female)	Percentage	Mean age (standard deviation)
CG (375G)	20 (11 - 9)	13	22.2 (± 1.5)
EG 358G	48 (17 - 31)	30	22.8 (± 4.8)
EG 498G	25 (5 - 20)	16	22 (± 1.3)
EG 148G	16 (8 - 8)	10	22 (± 2.9)
EG 123G	38 (17 - 21)	24	21.8 (± 2.4)
EG 240G	11 (4 - 7)	7	21.3 (± 1.7)
All EG	138 (51 - 87)	87	22.1 (± 3.3)
Total sample	158 (62 - 96)	100	22.1 (± 3.2)

How will AL affect PETEs' perspectives in terms of their experience and learning related to SE?

Participants

The study used an incidental-type non-probabilistic sample, with the sample selection matched to the class-groups. As mentioned before, five courses participated as EG (i.e., 123G, 148G, 240G, 358G, 498G) and one course was included as CG (375G). In the following table we display the demographic information for all groups (Table 1). There were no statistical differences among groups in terms of gender nor regarding age.

Results

Quantitative Analysis

This section shows the results of the statistical tests performed throughout the quantitative study. The IBM SPSS v.24 software package was used in this analysis.

Firstly, a reliability test was performed. A value of $\alpha=0.913$ was obtained for the Cronbach's Alpha test, showing excellent internal consistency. Secondly, the initial equivalence was verified. A value of $t(58)=0.393$, $p>.05$ was obtained for the Levene's test. When analyzing by courses, a value of $F(5.174)=0.996$, $p>.05$ was recorded for the one-way ANOVA test; therefore, the groups compared were considered equal. Then, pre-test/post-test comparisons were performed. The effect size was calculated using Cohen's d value, which may be interpreted as small ($0.2 < d < 0.5$), medium

Table 2. General and Category Comparison for the SECS Results.

Category	Experimental group (n=138)			Control group (n=20)		
	Pre-test	Post-test	d	Pre-test	Post-test	d
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Personal features	4.135 (0.316)	4.380 (0.262)*	-0.844	4.143 (0.366)	4.067 (0.314)	0.223
Social features	3.985 (0.386)	4.279 (0.297)*	-0.854	4.000 (0.377)	4.050 (0.390)	-0.130
Innovative features	4.030 (0.392)	4.302 (0.279)*	-0.799	4.114 (0.337)	4.005 (0.425)	0.284

*Significant differences between pre-test and post-test measurements ($p < .001$).

($0.5 < d < 0.8$), or large ($0.8 < d$) (Cohen, 1992). In general, the values obtained when applying the t test for paired samples were $t(29)=12.721$, $d=-0.846$, $p < .001$ for the EG and $t(29)=-0.889$, $d=0.113$, $p = .382$ for the CG, respectively. When analyzing by courses, the values obtained were $t(29)=10.457$, $d=-0.761$, $p < .001$ for 358G; $t(29)=5.503$, $d=-0.729$, $p < .001$ for 498G; $t(29)=7.165$, $d=-0.860$, $p < .001$ for 148G; $t(29)=11.098$, $d=-1.021$, $p < .001$ for 123G; $t(29)=6.423$, $d=-0.855$, $p < .001$ for 240G; and $t(29)=-0.889$, $d=0.113$, $p = .382$ for CG, respectively. Hence, there were significant differences between the pre-test and post-test measures in all EG, both in general and by course. In addition, effect sizes were predominantly large. No difference was reported for CG and the effect size for this comparison was small. These results were also found in the *general & category* analysis (Table 2).

Additionally, the *course & category* analysis revealed significant differences ($p < .05$) for all 15 combinations of pre-test/post-test measurements on EG. Again, no significant differences were reported for CG. The *general & feature* analysis displayed significant differences ($p < .05$) for *leadership*, *initiative*, and *ability to learn and evolve*. Finally, the *course & feature* analysis exposed significant differences ($p < .05$) for *goal-oriented motivation* (240G), *ability to take risks* (358G and 148G), *belonging to well-informed social networks* (123G), *creativity* (358G), *initiative* (358G), and *ability to change* (148G). Once again, no significant differences were reported for the CG. Later, a post-test/post-test comparison was completed. In general, a value of $t(58)=-3.296$, $p = .002$ was obtained for the Levene’s test; by groups, a value of $F(5.174)=-5.870$, $p < .001$ was reported for the one-way ANOVA test. When comparing each group individually with the CG the values obtained

after applying the Levene's test were $t(58)=-2.596$, $p=.012$ for 358G-CG comparison; $t(58)=-3.042$, $p=.004$ for 498G-CG comparison; $t(58)=-2.828$, $p=.006$ for 148G-CG comparison; $t(58)=-5.062$, $p<.001$ for 123G-CG comparison; and $t(58)=-2.720$, $p=.009$ for 240G-CG comparison, respectively. Hence, there were significant differences between the post-test measures when comparing EG to CG, both in general and by course. The *general & category* analysis revealed significant differences ($p<.05$) for *personal features*. The *course & category* analysis confirmed significant differences ($p<.05$) for *personal features* (498G and 123G), *social features* (123G), and *innovative features* (123G). The *general & feature* analysis displayed significant differences ($p<.05$) for *responsibility*, *creativity*, *ability to change*, and *ability to learn and evolve*. The *course & feature* analysis recorded significant differences ($p<.05$) for *leadership* (123G), *creativity* (498G and 123G), *initiative* (123G) and *ability to change* (358G, 498G, 148G, 123G, and 240G).

Finally, correlation tests were performed. Three significant records out of three were found in the category analysis using the Pearson's test, all of which were positive and had a significance level of $p<.001$ and a high degree of correlation ($0.6 \leq r_p < 0.8$). The feature analysis uncovered 120 significant records out of 136, all of which were positive and had significance levels of $p<.01$ for 108 cases and $p<.05$ for 12 cases. The degrees of correlation were high ($0.6 \leq r_p < 0.8$) for three cases, moderate ($0.4 \leq r_p < 0.6$) for 34 cases, low ($0.2 \leq r_p < 0.4$) for 75 cases, and very low ($0 < r_p < 0.2$) for eight cases.

Qualitative Analysis

Qualitative analysis was implemented using 119 reflective journals collected from EG students. Following established techniques for qualitative analysis, a double procedure was applied, from inductive to deductive and back again (Flick, 2014). NVivo 10 software was used in this analysis. Inductive analysis was open-coding while deductive phase was based on the categories and features of the SECS (Capella-Peris, Gil-Gómez, Martí-Puig, et al., 2020).

All extracts used in this qualitative analysis included category and feature name, researcher interpretation, textual transcript of the PETEs comment, and reference codes. As we have limited space to display this section, we offer the information for one extract per category, as an example, and a quote describing the additional results obtained. The selection of these quotes is related to its importance and depth, to highlight the students' experiences in each case.

Personal features > goal-oriented motivation. The students' ability to set their own objectives increased their interest and participation on the PE courses. This was reinforced when achieving those aims, fostering their commitment

and satisfaction with the educational experience. In addition, the individual leadership, creativity, and initiative promoted while implementing AL reinforced the student's satisfaction and commitment.

Through making the jogging sessions, I learned to set goals and then work to reach them. Every session had a goal and I would work to meet the goal of each session, whether it was a complementary, continuous, or non-continuous training session. When I saw myself reaching the goals, I set for myself, it gave me motivation to go further. Jogging is not something that I am used to so this was a big step for me and seeing improvement made me excited. <123G-C02>Ref.5.

Social features > coexistence and respect of public affairs. Students' reflections stated that having different approaches is not a reason to limit teamwork. Furthermore, the understanding that respect is a key aspect for living in community reveals the value of discussing those contrasts in education, not only for students but also for society. Additionally, they took advantage of these situations by addressing the course topics from several perspectives, which increased their knowledge content and ability to create ideas.

The course has also shown me that people can have different ideas on topics and still coexist and work together properly. Each class there were debates either on what is a sport, or what's fair in certain sports, or thoughts on current sport events in our university or sport events in general. These conversations show that although opinions can be different at the end of the day everyone can still coexist and work together toward a common goal. <498G-C07>Ref.1.

Innovative features > ability to identify opportunities. AL promoted leadership on students being the architects of their own training. It also stresses that they took advantage from both teaching and learning experiences. This situation is especially remarkable in our case, as we were working with PETEs because they are both student and teacher. Also, leading the course activities increased their motivation and participation in class. Additionally, they showed their satisfaction for being involved in this kind of educational projects.

The presentations allowed the students to take control of the classroom in a positive way, which I think was a great way for us to learn. From doing the presentations ourselves, it allowed us to learn and teach at the same time. As a result, many of us became fluent on our subject and widened our horizons of thinking when it comes to sports. <498G-C05>Ref.2.

Additional results. AL also produced supplemental effects due to the PETEs lack of exposure to this teaching methodology. Mainly, students reported

positive impacts such as increased academic performance, satisfaction, gratitude, appreciation, and enjoyment. However, some minor critics were also exposed.

I enjoy Dr. Capella's methods of teaching. Having students teach the course with presentations on different chapters is a great hands-on learning technique that is very beneficial to a visual learner like myself. <498G-C12>Ref.1.

I was put into some group chats with my peers to gain help on this course, but I was not as active as I should have. <358G-C20>Ref.1.

Data Transformation Analysis

This section displays a frequency analysis of the excerpts from the reflective journals, counting the number of citations related to the categories and features of the SECS. It also shows the average and percentage of citation for each case. Data transformation has been previously implemented in Education (Plano Clark et al., 2010) as well as in physical education teacher education (Capella-Peris, Gil-Gómez, & Chiva-Bartoll, 2020; Gil-Gómez et al., 2015). However, in this study the procedure was performed globally, showing the number of excerpts in each category and feature (Figure 1), by course, indicating the frequency of citations into each specific class (Figure 2) and by reflective journal, presenting all records related to each student individually (Figure 3). The following figures display results for each type of analysis as example.

These figures reflect the frequency with which each category and feature analyzed is cited in the reflective journals. This data provides a complementary view of PETEs' discourse, offering a new perspective of AL effects. Additionally, the information displays analyses in global terms, by course and by reflective journal, showing three different approaches.

Discussion

Globally, results obtained in the quantitative analysis indicate a significant improvement of SE in EG PETEs. In contrast to EG, no change in this sense was found for CG. This points out the beneficial effect of AL to promote SE on PETEs. Qualitative analysis shows a positive impact on SE of PETEs due to reasons such as leading their own learning experience, providing-receiving feedback among peers, being involved in team projects, performing research on preferred topics, contrasting multiple perspectives on discussion, or assessing their own performance. Likewise, data transformation reinforces

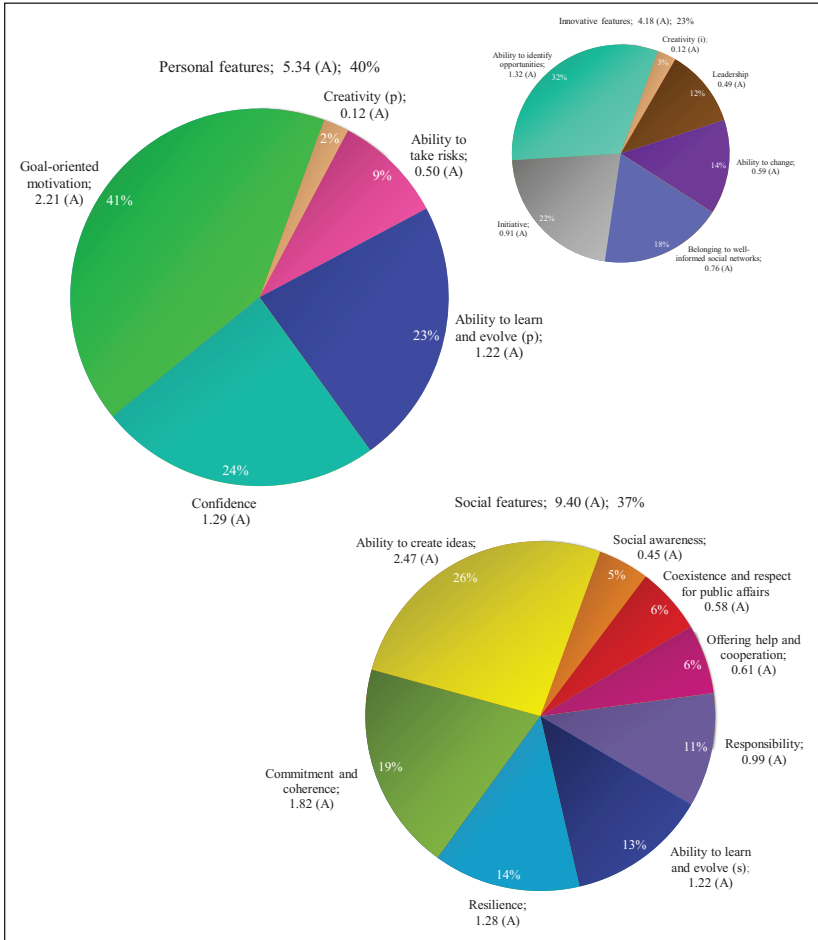


Figure 1. Global quotes of social entrepreneurship on EG ($n = 158$).
 Note. Total count (pie/slice size), average (A), and percentage (%) are displayed for each feature and category. Category percentages were normalized given that each category has a different number of features. Size of pie charts were scaled according to their percentage of citations.

both assessments, since reflective journals revealed more than 2,200 comments linked to SE on EG. This is in agreement with previous studies that used AL to encourage entrepreneurship education (Cooper et al., 2004; San Tan & Ng, 2006) and social entrepreneurship (Chang et al., 2014; Siqueira et al., 2015).

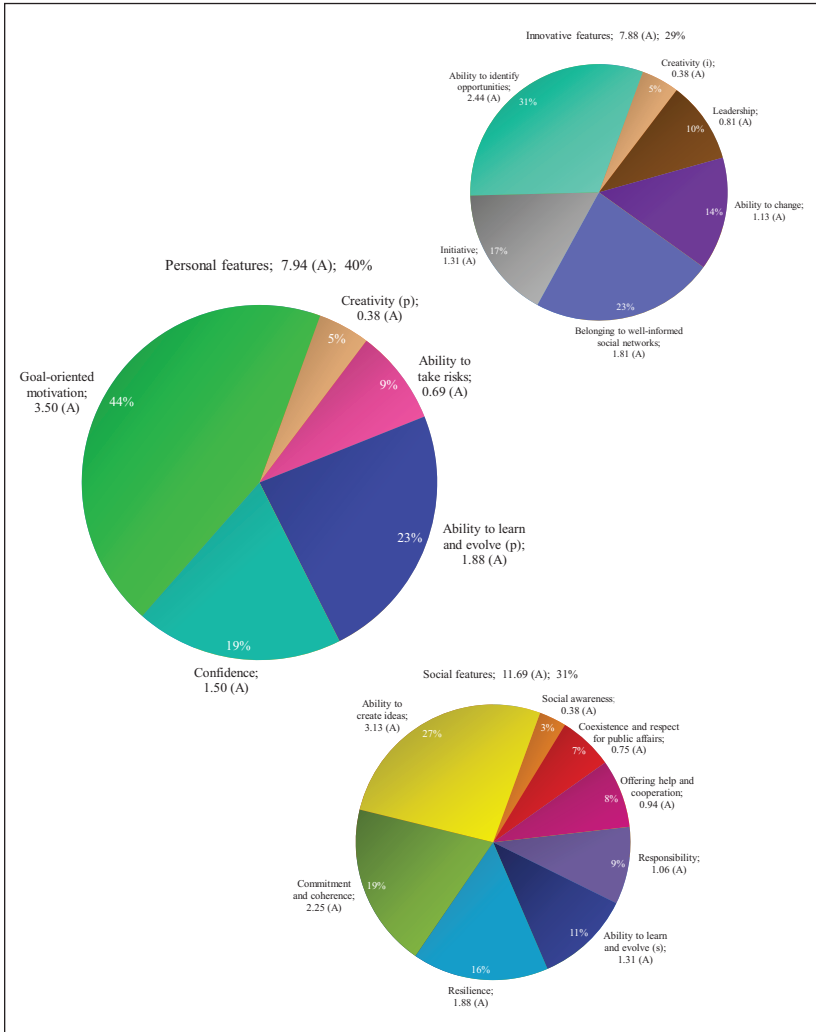


Figure 2. Quotes of social entrepreneurship on course 148G (n=16). Note. Total count (pie/slice size), average (A), and percentage (%) are displayed for each feature and category. Category percentages were normalized given that each category has a different number of features. Size of pie charts were scaled according to their percentage of citations.

The analysis by courses displayed significant improvements for all five EG. Higher *t* values were found for 123G and 358G, suggesting that *Jogging* and *Measurement and evaluation in health and physical education* were more appropriate contexts to promote SE on PETEs. However, other factors

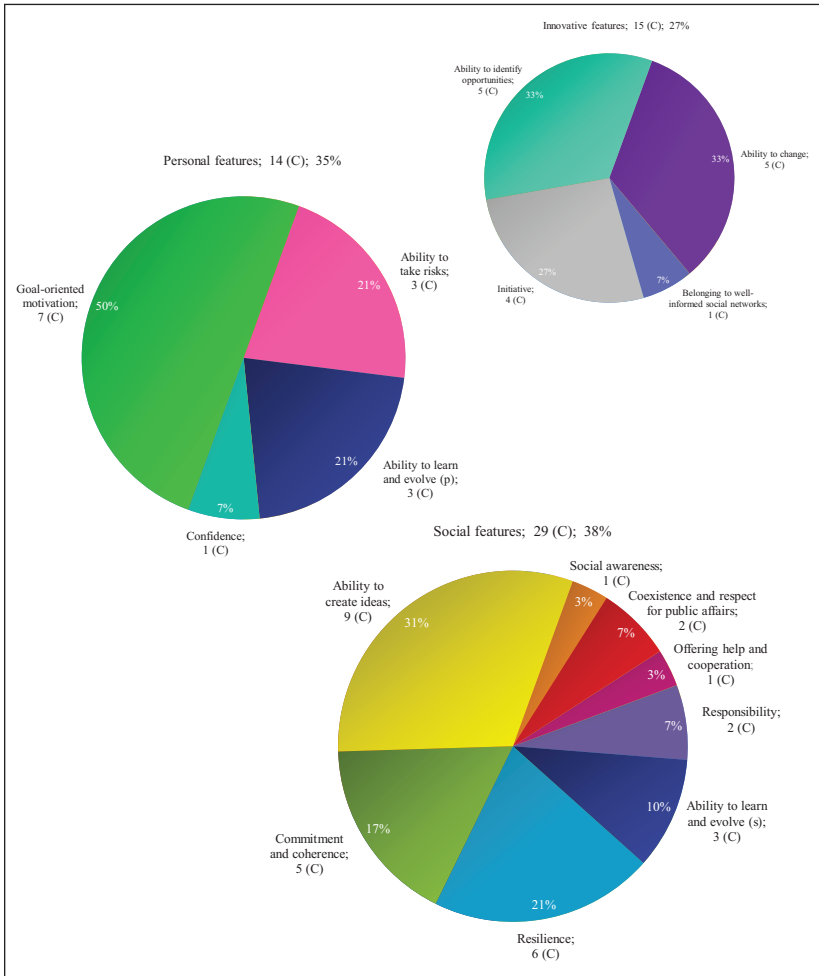


Figure 3. Quotes of social entrepreneurship on reflective journal 358G-C22 ($n = 1$).

Note. Total count (pie/slice size), number of comments (C), and percentage (%) are displayed for each feature and category. Category percentages were normalized given that each category has a different number of features. Size of pie charts were scaled according to their percentage of citations.

may also take part in this result, such as the group of students or the specific AL strategies implemented. Data transformation registered higher average of quotes for 148G (27.4), 240G (23.9), and 498G (21.2), indicating that AL impact on students' SE was high for those courses as well. This highlights the

value of addressing the study using mixed methods to not miss important implications. Those results reinforce global analysis. Furthermore, these records stand as new benchmark on SE research, since no previous comparison by courses was found in a literature search in this field.

Once again, quantitative results revealed significant improvements in the *general & category* analysis for all three EG cases (i.e., personal features, social features, and innovative features), with no changes made on CG. Higher *t* values were found for *personal features* and *social features* categories, suggesting that those areas reflected better improvement (Bandera et al., 2018; Brown et al., 2014; Chuang et al., 2018; Song & Grabowski, 2006). This situation had a similar expression on data transformation, displaying better percentage of quotes for those categories. The *course & category* analysis strengths that assessment, showing significant improvements for all 15 combinations on EG. Four courses obtained a higher *t* value on *social features* category (i.e., 358G, 498G, 123G, and 240G). Additionally, four courses recorded a higher percentage of quotes on *personal features* category (i.e., 498G, 148G, 123G, and 240G). Both results suggest a greater impact of AL on the fields of *Organization and administration of physical education, Jogging and Badminton and tennis*. As previously, those results represent a new point of reference on this research field.

The *general & feature* analysis reported significant improvement for *leadership, initiative, and ability to learn and evolve*. Qualitative results gave insight to those benefits due to providing support among classmates, looking for external resources to supplement course content, applying learning to out of class situations, asking questions to solve PETEs doubts and confirm understanding, and acquiring specific knowledge related to PE courses. Features with higher average of quotes on reflective journals were *ability to create ideas* (2.47), *ability to learn and evolve* (2.44), and *goal-oriented motivation* (2.21). Qualitative analysis attributed those effects to activities such as debating sensitive issues in PE field, choosing preferred topics for discussion, deciding assignments value and conditions (e.g., due dates, format, and sections to be included), or linking course learning to future career. Agreement with several studies, proposes the remarkable effect of AL on *leadership* (Castles, 2018; Findık, 2016; Sun et al., 2017; Woolard, 2018); *initiative* (Howard et al., 2017; Majanoja & Vasankari, 2018); *ability to learn and evolve* (Chróinín & O'Sullivan, 2016; Munthe et al., 2016); *ability to create ideas* (Audenaert & Decramer, 2018; Wright et al., 2016); and *goal-oriented motivation* (Huizenga et al., 2009; Song & Grabowski, 2006).

The *course & feature* analysis displayed significant improvement for *goal-oriented motivation* (240G), *ability to take risks* (358G and 148G), *belonging to well-informed social networks* (123G), *creativity* (358G),

initiative (358G), and *ability to change* (148G). This suggests greater impact on the individual features of SE for the course *Measurement and evaluation in health and physical education*, coinciding with general results. Data transformation yielded higher average of quotes for *goal-oriented motivation* (240G) (3.56), *ability to create ideas* (498G) (3.4), *commitment and coherence* (240G) (3.22), and *ability to identify opportunities* (240G and 148G) (2.44), indicating that *Badminton and tennis* was the most improved course in this sense. As before, these records establish a new standard for SE research, since no similar comparisons were found in previous studies.

Finally, correlation analyses displayed numerous significant connections among SE features with qualitative data to support these results describing how the relationships were developed. Moreover, the data transformation analysis of reflective journals exposed similar records. Both situations suggest the enhancement of SE as a whole concept—rather than promoting its features individually—and a similar effect among between PETEs. Furthermore, qualitative analysis revealed additional AL benefits in terms of satisfaction and increased academic performance (Armbruster et al., 2009), gratitude and appreciation (San Tan & Ng, 2006), and enjoyment (Wu et al., 2011). Altogether reinforces the implementation of educational projects to promote SE in PE using AL.

Conclusion

In sum, active learning teaching methodology produced outstanding improvements in social entrepreneurship of physical education teacher education students. This conclusion agrees with several studies regarding the implementation of AL and the promotion of SE. The results lead us to accept the H_1 hypothesis and provide comprehensive answer to the research question. Additionally, the study reveals new outcomes in the research field, especially in terms of contrasting the impact of AL in different PE courses. Mixed methods approach displayed highly reinforcing and complementary records in addition to supplemental information, strengthening the application of this study design. For future research, it is proposed to compare the academic effect of AL in different courses of higher education, and to contrast AL implementations with greater differences in terms of duration, intensity, and specific teaching methodology.

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