Does Grouping By Perceived Ability Sustain Student Attitude Towards Physical Education?

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ABSTRACT

Literature relating to ability grouping of students is extensive, yet little empirical evidence exists that could provide a greater understanding of the effects of grouping on students specifically engaged in Physical Education (PE) lessons. This study investigated the effect on student attitudes towards PE after being grouped into classes based upon their perceived ability. Following the determination of perceived ability; 67 high school students were placed into one of three PE class groups for a period of six weeks instruction. Following this intervention, semi-structured interviews were conducted, which sought to determine whether any change in attitude could be attributed to the grouping arrangements. A number of participants described a change in attitude, however, other factors that were not given as much emphasis in the research design yielded more descriptive and stronger responses from the participants. As a result of further analysis of the data, there emerged a range of implications for PE teachers regarding ability grouping, as well as recommendations and considerations for future research in PE.

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INTRODUCTION

Ability grouping has been a practice at the secondary school level for some years. The practice is most commonly used in the subject area of mathematics and the Gifted and Talented students are the most researched.

The benefits of ability grouping have centred on small gains in examination scores for students (Kulik & Kulik, 1982; Lloyd, 1999). Teachers report efficiencies in planning for a more homogeneous level of ability in their classes as another benefit of ability grouping. However, for students, the self-concept and social comparisons are challenged by Marsh (1984) contributing to the debate on the social implications of grouping students, which progressed the higher academic achiever. The socio-affective impact of ability grouping and acceleration supports the notion of ability grouping for gifted and talented students (Neihart, 2007). Students who were considered to be Gifted and Talented believed that being grouped homogeneously would advantage them academically, however, they were less sure that such grouping would have a positive effect on their social needs (Adams-Byers, Whitsett, & Moon, 2004). Generally, the findings of research in school settings suggests there is an academic advantage for the high academic achiever to be grouped according to ability, however, the less gifted students gain more by being grouped heterogeneously. Overall the social implications and impact upon the affective domain of students are less favourable when students are grouped according to ability.

Ability grouping in Canadian schools is common (Robertson, Cowell, & Olson, 1998). Specifically, in Ontario, ability grouping was discouraged on grounds of equity, as it was determined that the majority of students were disadvantaged in order to advantage the gifted students. However, what is unclear about the literature on ability grouping is the consistency of outcomes applicable to all subject areas.

Physical education (PE) is a movement domain. The general topic of ability levels, whether perceived or calculated, that are connected with skilled performances are areas of interest for teachers of this key learning area. For example, Chambers (1988) noted that possible advantages of instructional grouping in PE include the promotion of safety, which is relevant for activities where collisions are likely to occur. Grouping by ability may provide an effective means of individualising instruction, which in turn can create a less intimidating environment, specifically, for lower ability students (Goodwin, 1997). In the area of games and sports, Silverman (1993) considered that grouping was conducive to organisational practice that would permit planning such that individuals could learn at their own pace.

In contrast to the positives noted when PE is conducted with ability grouping, Goodwin (1997) has provided examples of unsustainable situations, including issues related to equity and social justice. Examples include the consideration that mixed classes are more reflective of society and also that mixed classes may be more beneficial to disadvantaged or minority students.

Notwithstanding, this research investigated whether Year 10 students, who were grouped by perceived ability for PE lessons, would show a shift in their attitude towards that discipline. Investigating student attitude rather than achievement allows us to channel the effects of grouping on students’ cognitive, affective, social, and
perhaps emotional domains. Narrow conceptualisations of achievement tend to concentrate our understanding and focus toward students’ cognitive abilities; however, we feel that a more holistic understanding of the effects of grouping by ability is necessary.

Two sub-questions informed how the research was conducted. Firstly, would there be any effects on attitude toward PE when students were placed into a class, based on their perceived ability in PE? Secondly, were there any aspects of the grouping arrangements in PE classes that the students liked or disliked?

**BACKGROUND INFORMATION**

East Woods College, a coeducational private school within a suburb, which is part of the Greater Toronto Area in Canada, was the location for the research. East Woods College (EWC) had a secondary school population of 600 students. The participants in this research project comprised both male and female PE students who were in Year 10. Their average age was approximately 15 years. Students who attended EWC came from ethnically diverse backgrounds and resided, mainly, in middle-class suburban areas.

The PE teachers at EWC were all qualified to teach within that discipline, one of which was male and the other two females. One of the researchers and a co-author of this paper was employed at the EWC as a full-time casual teacher during the intervention period and was engaged in teaching a number of diverse subjects, including PE. The regular presence of the researcher enabled timely discussion with both the PE staff and students as issues concerning the project arose. In addition, having a daily presence enabled information sessions to be conducted with both parents and participants, as well this presence aided in the distribution of information sheets and consent forms.

Schools in Ontario are required to provide 110 hours of teacher-student contact in Year 10 PE, of which 35 hours must be dedicated to the study of health topics (Ontario Ministry of Education, 1999). To accommodate this requirement, EWC employed a rotational system of instruction that accommodated both physical education and the mandatory health lessons. The normal school situation involved sub-dividing the Year 10 PE cohort into single sex class groups of approximately 30 students.

**METHODOLOGY**

In order to group students by perceived ability, the “Sports competence” subscale of the Physical Self-Description Questionnaire I (PSDQ I) (Marsh, 1999) was employed to measure the perceived ability of participants \( N = 67 \) from two Year 10 PE classes at East Woods College. The complete version of the PSDQ I (Marsh, 1999) has been rigorously tested psychometrically; validity and reliability have been established for secondary school students in several countries (Marsh, 1999; Marsh, Marco, & Asci, 2002; Marsh, Richards, Johnson, Roche, & Tremayne, 1994). For this study the assumption was made that the integrity of the instrument would be upheld with Canadian students. The full instrument is deemed to measure physical self-concept,

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1 Pseudonyms are used throughout the paper.
and uses seventy items from eleven subscales that students respond to on a true-false response scale, ranging from 1 (False) to 6 (True). However, although this study did not assess the self-concept variable as such, the Sports competence subscale of this instrument was of particular relevance to measure perceived ability.

**Perceived Ability**

The conceptualisation of perceived ability used in this study identifies two constructs, namely, conceptions of ability and perceived competence. An individual’s conception of ability is identified as either task-oriented or ego-oriented, in line with definitions developed by Nicholls (1989). Therefore, because the PSDQ I (Marsh, 1999) offers items targeting both task and ego-orientations, it was deemed to be a suitable instrument for measuring perceived ability. An example of a task-oriented item, which allowed an individual to conceptualise ability in a self-referenced manner was, “Most sports are easy for me.” Alternatively, an example of an ego-oriented item was “I am better at sport than most of my friends.” This item may allow the individual to conceptualise ability by comparing their own ability to the ability of others.

The PSDQ I (Marsh, 1999) was administered to participants at the beginning of their PE lesson. Students were provided with instructions by the researcher concerning responses to the items of the instrument in accordance with those provided by Marsh (1999).

Following analysis of student responses to the PSDQ I (Marsh, 1999), the first phase of this research involved placing each student into a perceived ability group, i.e., high, mid or low. Students were allocated to one of the perceived ability groups based on their mean response score to the six items from the Sports competence subscale of the PSDQ I instrument. Possible scores ranged from 0.00 to 6.00, with results closer to 6.00 inferring a higher perceived athletic ability than those closer to 0.00. For the operational purposes of this study, and to ensure that the number of students allocated to each of the three groups was similar, the following cut-off scores were used; high perceived ability was allotted to individuals who achieved a mean response score between 5.00 and 6.00; mid perceived ability was a score between 4.00 and 4.99; and low perceived ability was a score between 0.00 and 3.99. These values were subjectively derived and were determined by considering the skew of the perceived ability scores towards the higher end of the scale.

Each perceived ability group was labelled by name, which was designed to mask the basis upon which the participants were being assigned to each group. The high-perceived ability group was labelled “Blue”, mid-perceived ability “White,” and low-perceived ability “Green.” Table 1 shows how the two classes, namely, A and B, were organised for the intervention process.
### Table 1: Experimental Conditions for Classes A and B

<table>
<thead>
<tr>
<th>Perceived Ability</th>
<th>Class of origin</th>
<th>N° Participants from each class</th>
<th>Unit order</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (Blue group)</td>
<td>A</td>
<td>11</td>
<td>Health</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>10</td>
<td>Handball</td>
<td>Ms “L”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Basketball</td>
<td>Mr “C”</td>
</tr>
<tr>
<td>Mid (White group)</td>
<td>A</td>
<td>11</td>
<td>Volleyball</td>
<td>Mr “C”</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>15</td>
<td>Health</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Badminton</td>
<td>Ms “L”</td>
</tr>
<tr>
<td>Low (Green group)</td>
<td>A</td>
<td>10</td>
<td>Basketball</td>
<td>Ms “L”</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>10</td>
<td>Wrestling</td>
<td>Mr “C”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Health</td>
<td>NA</td>
</tr>
</tbody>
</table>

The column headed “Unit order” in Table 1 shows three units of work, each conducted over a period of 6 lessons. For example, the high perceived ability (Blue) group from both Class A and B attended health class for the first 6 lessons, the mid perceived ability (White) group from Classes A and B were taught volleyball for the first 6 lessons, and the low perceived ability (Green) group from Class A and Class B were taught basketball for the first 6 lessons, i.e., each group was taught 6 lessons of health, and 12 lessons of PE under the experimental conditions.

The health class was not relevant to the intervention, hence “NA” was allocated to denote the teacher for this unit, but attendance in these classes was compulsory for all students. Each class was taught 6 lessons by either Mr. “C” or Ms. “L”. Students were exposed to both teachers to minimise the confounding variable that one teachers’ style may strongly influence the attitude of the experimental and comparison groups toward PE.

There was a relative spread of students in Classes A and B between each of the three perceived ability groups, such that each of the perceived ability groups was allocated approximately the same number of students. Table 2 shows the number of males and females allocated to each of the three perceived ability groups in Classes A and B.

### Table 2: Perceived Ability Group Allocation According to Sex for Classes A and B.

<table>
<thead>
<tr>
<th>Class</th>
<th>Sex &amp; Number</th>
<th>Perceived Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High</td>
</tr>
<tr>
<td>A</td>
<td>Male</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Sub-totals</td>
<td>32</td>
</tr>
<tr>
<td>B</td>
<td>Male</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Sub-totals</td>
<td>35</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>N = 67</td>
</tr>
</tbody>
</table>

It is noteworthy that the data in Table 2, shows that males were disproportionately represented the high groups in Classes A and B, whereas the low perceived ability contained more females.
Interviews

Interviews regarding student attitude toward PE provided qualitative data from which answers to the second and third research questions were derived, namely: “Were there differences in the attitude of males and females toward PE in each of the perceived ability groups?” and “What did the students like or dislike most about the grouping arrangements?” The structured interview questions were shaped by these research questions, however, the principal researcher remained aware of opportunities to explore new lines of enquiry that appeared in the interview scenarios and probes and prompts were employed to ensure that deep understandings were gained (Berg, 2007).

Interviews were conducted with participants ($n = 15$) within 10 days, following the completion of the intervention. This approach was adopted in order to gather responses at a time when the students could most easily access changes in their attitudes from memory. Five students from each of the three perceived ability groups (high, mid, and low) were interviewed. To account for a relative equality in independent variables identified in the study (namely, sex and perceived ability), the purposive sample of participants interviewed consisted of:

- **High Perceived Ability:** female: $n = 3$, male: $n = 2$
- **Mid Perceived Ability:** female: $n = 3$, male: $n = 2$
- **Low Perceived Ability:** female: $n = 2$, male: $n = 3$

The conduct of the interviews closely followed the steps outlined by Cohen, Manion and Morrison (2001) and Kvale (1996). Firstly, interviews of the purposive sample of participants were recorded on audiotape using a cassette tape recorder and were transcribed verbatim. Secondly, units of meaning pertinent to the research questions were delineated. Specifically, differences in the attitude of males and females toward physical education as a result of grouping by perceived ability and responses regarding what students liked or disliked most about the grouping procedures were sought. Thirdly, themes and categorisations were determined from the units of meaning. Fourthly, these themes were contextualised and interpreted to give a broad scope relating to student attitude toward PE when grouped by perceived ability. Each interview was conducted over a time period between fifteen and thirty minutes duration.

Interview data enabled the researchers to gather responses, which helped to gain a richer understanding of student attitude. Several interview items were structured to reduce errors in sequencing and wording and to increase reliability by ensuring that participants received identical, or nearly identical questions (Berg, 2007). These items were developed to reflect a conceptualisation of attitude as consisting of affective, cognitive and behavioural components (Zanna & Rempel, 1988), and emphasised notions of change in attitude of which students may have been cognisant.

As Silverman and Subramaniam (1999) have outlined, the measurement and subsequent analysis of attitude in physical education research has been problematic, due to conflicting theoretical perspectives of the attitude construct. For example, the term attitude has often been confused with feelings or beliefs. Zanna and Rempel’s (1988) conceptualisation of attitude, which was applied in the construction of interview items in this study, includes feelings (affective component), beliefs (cognitive component) and actions (behavioural component). Thus, feelings and beliefs are viewed as part of an attitude and not as a separate entity.
RESULTS

The results section comprises two aspects of the findings following the intervention. The first describes student attitude, in general, toward PE. The second provides details pertaining to the results related to the effect grouping by perceived attitude may have had on the students.

Student attitude toward physical education

PE was described as “fun,” with 9 of the 15 students interviewed stating that they “enjoy the opportunity to learn new physical skills.” Being with friends and having a break from other school subjects were also viewed as important facets of an enjoyable PE experience. Conversely, doubts regarding athletic competence, and lack of competition were identified as factors that contribute to a dislike of aspects of their PE class.

Let’s Get Physical...

The opportunity to learn new physical activities was a common theme that emerged in relation to enjoyment of PE. The attitude of students toward PE was reflected in a comment by Jacki, a female from the mid perceived ability group: “I think it’s a lot of fun…the activities we do…they cover a lot of different sports…I enjoy a lot of different activities…I get to learn different things.”

Some students appeared to enjoy learning new activities; however, others associated enjoyment, more with the chance to be away from “academic classes,” such as mathematics and science. When asked what students like most about PE, several respondents referred to the break in their day that PE provided:

“Well, It’s not like, sitting in a classroom and then you’re learning the textbook. You’re more like, having fun with your friends” (Judy, mid perceived ability group).

“Um…I think it’s good because you get…rather than sitting around doing other subjects, you get to actually be active, and it’s kind of a break from your other subjects” (Cindy, low perceived ability group).

No students specifically reported having a poor attitude toward PE, however, factors were identified that may have contributed to a dislike of PE in certain instances. These included feelings of low competence, fitness testing, and an emphasis on fun rather than competition. For example, Mark stated that he disliked “not progressing the way I hope I should,” going on to say “it makes me feel uneasy.” Mary as a particular source of embarrassment also identified the fitness-testing component of the PE curriculum: “Well, like, I hate doing push ups and crunches. Like, I don’t know, I’m usually one of the first ones to get out, I’m not able to compete, like, um…get a certain number. No, I just find it pretty embarrassing sometimes…”

Alternatively, students who perceived themselves to be of high ability suggested that teachers frequently de-emphasised competition, leaving them frustrated that they could not show off their skills. A sense of competition was recognised by some of these students as motivation for successful performance. For example, Adam, a male from the high perceived ability group, referred to an instance when he was identified...
by the teacher for making fun of one of his friends for not successfully executing a skill. Adam tried to defend this by saying:

Mr. [C] may think that we’re joking around, as making fun of each other when one doesn’t do as well...as the other, but it’s more pushing us to make each other go farther. Make each other, like, not want to get made fun of, you know?

Comments such as these outline several examples of what students dislike about PE, however, these were revealed only when participants were specifically questioned about their dislikes. Several students indicated that there was nothing that they dislike. For example, Tony, a male from the low perceived group male stated, “I’ve never had negative thoughts about P.E.”

**Student attitude when grouped by perceived ability**

Thirteen of the fifteen students interviewed were not openly aware that perceived ability levels determined the groups. However, two students specifically referred to the fact that the groups consisted of students who appeared to have compatible skills. When Cindy, a female from the low perceived ability group, was asked what she liked about the grouping arrangements in the research conditions, she stated:

“...I liked that, because you know that there’s other people that are the same as you, so you kind of don’t feel as bad if you did something wrong, you don’t feel stupid or anything about it.”

Further probing following Cindy’s comment revealed that she felt more incentive to try in class, which made her “feel good.” She stated, “Well, I actually feel better about myself, because I’m participating more than usual.” This statement refers to both the affective (feelings) and behavioural (actions) components of attitude. Cindy was the only student from the low perceived ability group who made specific reference to ability levels in the grouping arrangements, although John, a male from the high perceived ability group, stated that “the people, like, were more active in our group, so it’s more challenging.” John went on to say that a “more challenging [class] is more fun.”

Other students made few specific references to ability grouping. Cindy and John realised that the groups provided more challenging tasks, however, some students felt that it was the coeducational class conditions that were responsible for making PE more engaging. As noted in the background section of this paper, PE classes at East Woods College were segregated according to sex, and the change to coeducational PE class was a factor that was frequently raised by students in relation to attitude.

**Anything You Can Do, I Can Do Better...**

For some females in each of the perceived ability groups, the change from single-sex to mixed classes provided more motivation to engage in active participation than they had felt previously. Several females indicated that having males in the class presented a skill-related challenge, which they felt motivated, them to excel. The following comments illustrate this facet.
“I think I was more involved, cause you kind of have more competition when you’re playing. That’s the good thing about co-ed too, because, kind of, you kind of strive to be better at it, cause you have competition” (Cindy, low perceived ability group).

“…you kind of have to work harder with the guys around, cause, like, you can’t just slack off, cause the guys are really intense, and it makes you more into the sport. I like it. Like you actually break a sweat” (Kate, high perceived ability group).

“…Well, some of the guys like, guys say that they’re better at sports, they’re more active and stuff, but sometimes when you’re with guys, you get to show them that you can be just as active, just as experienced as they are” (Heather, mid perceived ability group).

Five of the eight females interviewed considered that single-sex PE, which was their regular class setup, was quite frustrating due to a lack of activity from other class members. In turn, four students attributed an increase in their involvement in the experimental conditions to the coeducational class arrangement. Kate, a female from the high-perceived ability group, thought that in terms of involvement, the coeducational arrangement “was a positive way for the girls.” Robyn, a female from the high-perceived ability group, said:

“…sometimes I don’t like, just um…playing sports with girls all the time. I like playing sports with boys, “cause they get more into them than girls do. I’m more into athletics, and some girls, and so they…some girls will hang back and not get into it and it’s kind of annoying.”

Males who were interviewed also appeared to enjoy the coeducational arrangements. David, a male from the mid perceived ability group, thought that having coeducational PE made it “more challenging.” His reason for this was that “it brought a different aspect to the games” because the girls “play in a different way.” Tony, a male from the low perceived ability group, elaborated about why he thought females provided a more challenging opportunity, claiming, “guys may be stronger, the girls are faster and they thought on their feet more.”

Alternatively, Nick, a male from the mid perceived ability group, thought the coeducational arrangement led to a decrease in competition levels, yet he felt that he still tried harder in the new grouping arrangement, “maybe because of the friends and different people, not the people you’re used to…and you want to try your hardest.” Having friends in the PE class was another theme that was cited frequently by students.

I Get By With a Little Help From My Friends…

Apart from the physical challenges that coeducational grouping allowed, such as contrasting levels of competition or adjusting to different skill sets, a common response from both males and females was that the coeducational class allowed them to interact with more of their friends. This finding was evident across high, mid and low perceived ability levels. Tony, a male from the low perceived ability group, enjoyed the coeducational aspect of PE because “I just had a lot of real friends in coed. I have a lot of friends who are girls that I don’t [usually] see in this class.”
Mary, a female from the low perceived ability group, had a similar response, claiming, “I knew all the guys that were in my gym class, we were just classmates and friends and it was a lot of fun.” While friendship was identified by some students as a way to make the class more fun, Kate, a female from the high perceived ability group, felt that this aided her learning, stating “they can actually like improve, like, say you have a skill that you need to work on, they can help you improve on that if they’re better at it.” Tony provided a similar response, saying, “I feel I learn better when I’m with my friends.”

Three of the fifteen students interviewed considered that being with friends also led to increased involvement in PE. Judy, a female from the mid perceived ability group, thought that she was more involved when participating in the experimental grouping conditions, “because, well, the other class of boys that we played with were really close friends of mine, and we just, played with them a lot.” Similarly, Beth, a female from the high-perceived ability group, felt that being with friends was part of the reason for increased involvement in the experimental conditions, stating:

I got to know more people as well, so, I was with my friends, I was playing, like, a lot. I was playing, like, more. I was more involved in the games and stuff.

Adam, a male from the high perceived ability group, also considered that he was more involved in the experimental conditions, because the different grouping arrangement allowed him to be with more of his friends. He reasoned that:

“…when you’re with your friends, and since I like to work harder, they push me, um, you just like to participate more and kind of showboat to your friends.”

**DISCUSSION**

Contrary to what the study intended to investigate (that is, perceived ability grouping) students who were interviewed identified having friends in the class as an important contributor to a positive PE experience thus impacting upon their attitude toward the subject. This finding supports previous suggestions by Carlson (1995) and Portman (2003). Students highlighted several factors that concur with Gabbei’s (2004) notion of using combinations of strategies when grouping students in PE. Factors included: being in a coeducational class, being challenged by other students, and students feeling comfortable to participate at their own levels. Arranging groups according to perceived ability levels was recognised by two students as having a positive impact on their attitude; however, this was not an aspect that was consistent for the entire range of those students who were interviewed. Implications for physical educators regarding how they arrange their classes are now outlined in light of these findings.

Given the difficulty of balancing the effects of ability grouping for the academic (cognitive domain) and social needs (affective domain) of the students in previous studies, the application of grouping by perceived ability and the interviewing of the student reactions to this investigation highlight that PE may provide a rich sustainable context from which students may gain positive benefits in both domains of their education. Specifically, students interviewed in this study indicated that PE provided opportunities to interact with peers of both sexes, opportunities that may not be present, or accessible in other subjects. For example, matters such as classroom
seating arrangements may limit the opportunities for secondary students to engage socially with one another. Moreover, several students stated that the opportunity to interact with peers assisted in their learning.

In a similar finding to Subramaniam and Silverman (2007), students overwhelmingly possessed positive attitudes toward PE, and enjoyed the aspects of being with their friends, and being provided with the opportunity to dispel sex stereotypes. Notably, the girls from the high-perceived ability group considered that the imposed experimental conditions (i.e., mixed sex classes) were responsible for providing a greater challenge to raise their level of performance, which is also the finding of Portman (2003). With the exception of perhaps wrestling, most of the activities in which the students in the study participated (e.g., volleyball, badminton and basketball) were arguably gender-neutral; that is, not typically masculine or feminine. This factor may have affected the attitudes and perceived abilities of the participants. For example, Li, Lee and Solmon (2006) and Solmon, Lee, Belcher, Harrison and Wells (2003) found that males and females have different perceptions of ability according to the gender-typicality of the activity. Thus, future studies may consider an intervention period of longer duration; this would allow either a wider variety of activities to be learned by the students, including gender-typical and gender-neutral activities, or a small number of activities being learned in depth. Such adjustments may impact the results of this study, and are worthy of further investigation.

Overall the students had positive reactions to the grouping arrangements. Mixed sex groups and students’ perceived ability as the foundations for their class composition appeared to “work” for the students, based on age and ability level – but what did the teachers think? This is a place for further research in this area of grouping by perceived ability and the effect on attitude of the participants.

REFERENCES


