

The Content of Norwegian Primary Physical Education: Teachers' Perspectives on Possibilities and Barriers

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Abstract

Physical education (PE) in Norway and other countries has been criticized for its emphasis on sports, leading to a misalignment between curriculum intentions and classroom practices. Understanding the perspectives of PE teachers and the factors influencing their choices of activities in PE is crucial as they interpret the curriculum and plan PE classes. This mixed-methods study aims to provide more knowledge about the activities taught (content) in Norwegian PE lessons for the youngest students (primary level), as well as teachers' perspectives on what influences their choice of content in PE classes. We conducted a quantitative survey with 450 PE teachers and obtained qualitative insights through 9 interviews. The results reveal a prevalence of ball games and play in PE classes. Time constraints, equipment, and class and gymnasium size are external factors that teachers experience as barriers for the types of activities they can include in their PE lessons. The study examines how these factors shape PE practice through the lens of the material-economic dimensions of practice architectures theory. The findings provide valuable insights into the challenges faced by PE teachers and inform the development of strategies to enhance PE education in primary schools.

Keywords: *primary physical education; content; curriculum; frame factors*

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Introduction

Primary school physical education (PE) is crucial in promoting lifelong physical activity (Ministry of Education and Research [MER], 2015; Naylor & McKay, 2009). Providing children and adolescents with diverse experiences is crucial for fostering long-term engagement in physical activity (Engström, 2008). As individuals progress through different stages of life, their motivations and purposes for physical activity

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may evolve. Therefore, offering a range of exercise experiences is vital in accommodating these changes (Engström, 2008; Green, 2008). However, PE is criticized for its limited range of activities and its emphasis on sports and competition (Griggs, 2007; Hardman & Marshall, 2005; Morgan & Hansen, 2007, 2008). This phenomenon, referred to as the “sportification” of physical activity, has been consistently observed in prior research (Green, 2008; Naul, 2003). Despite explicitly mentioning activities such as dance, swimming, orienteering, and outdoor activities in the curriculum, there appears to be a gap between what is prescribed and what is implemented in practice (Hardman & Marshall, 2005). Ball activities, games, athletics, gymnastics, and fitness training prevail (Hardman & Marshall, 2005). Overemphasizing sports and health suffocate other types of learning within the subject, inhibiting PE practices (Petrie, 2016). Despite its numerous benefits, PE often receives less attention in schools than other subjects (Haydn-Davies et al., 2007; Ommundsen, 2008; Wright, 2002). Teachers face institutional and teacher-related barriers contributing to the need for more variation and engagement in students’ PE experiences (Morgan & Hansen, 2008). In primary schools, limited time and resources pose significant institutional barriers. Inadequate funding, restricted access to facilities and equipment, and other resource constraints contribute to a narrow focus on sports in PE classes and draw criticism toward the subject (Curtner-Smith & Meek, 2000; Faulkner et al., 2004; Hardman & Marshall, 2005; Mandigo et al., 2004; Smith & Parr, 2007).

Moreover, many generalist primary school teachers need more confidence and competence when teaching PE (Chedzoy, 2000; Hardman et al., 2008; Morgan & Hansen, 2008). Negative attitudes toward PE are also prevalent among some teachers (Harris et al., 2012; Tsangaridou, 2012). However, it is worth noting that other studies have found that many teachers do value the subject but need more confidence in delivering it (Morgan, 2008).

PE is compulsory for Norwegian primary students from six years old. Norway’s PE curriculum includes competence aims for students after the fourth and seventh years of primary school. The curriculum includes various physical activities, including traditional options like skiing, outdoor education, and swimming, as well as alternative options like skateboarding, BMX cycling, and slacklining. The curriculum outlines specific learning outcomes that teachers must implement. Schools can decide on content and teaching methods, reflecting a key principle of Norwegian education. The subject aims to encourage lifelong physical activity and enjoyment (MER, 2015). Yet, the urgency for effective PE interventions grows as evidence suggests physical activity levels begin to wane as early as age 6–7. This trend emphasizes the significance of PE’s role in instilling enduring physical activity habits from a young age (Deng et al., 2018).

According to Moen et al. (2018), as reported by teachers and students, PE lessons at the primary school level in Norway emphasize ball games, while in higher grades, there is an emphasis on strength training. Moen et al. (2018) demonstrate through teacher, and student reports that curriculum content is scarce, such as dance, skateboarding, yoga, parkour, climbing, and swimming. Moreover, teachers report how

the physical environment (sports halls or gyms), equipment, and limited PE hours influence PE content.

In their study, Standal et al. (2020) conducted surveys among students and interviews with teachers in secondary schools, revealing that basic training and ball activities are more prevalent in PE lessons than dance and modern activities. Although teachers claim to cover a wide range of content, they most commonly mention sports and ball games to describe their lessons.

Despite existing research on PE in Norway, there is a need for more studies explicitly focusing on PE in grades 1–4. Most research focuses on secondary school PE (Løndal et al., 2019). The prevalence of traditional ball sports in PE content is also evident in studies conducted in Sweden, which has a similar school context to the Norwegian (Larsson et al., 2016; Liljekvist, 2013; Londos, 2010; Lundvall & Meckbach, 2008; Redelius & Larsson, 2010). Annerstedt (2008) highlights the intention to offer a variety of activities in Swedish PE but identifies a gap between intention and practice. According to Lundvall and Meckbach (2008), more than 40% of teachers of students aged 15–16 experience time and group size as significant limiting factors.

Further, some teachers consider lack of equipment, facilities, and outdoor opportunities as limitations. Nevertheless, the perception of time constraints correlated minimally with ball game frequency. To our knowledge, apart from the Moen (2018) study, there is a lack of Norwegian research examining the influence of external factors such as time, group size, gymnasium size, and equipment on primary PE content. This study aims to gain both a broad and in-depth insight into, from the teachers' perspective, how and why such external factors influence the content of PE lessons.

Theory of practice architectures

According to the theory of practice architecture (Kemmis, 2022; Kemmis et al., 2014), teaching practices consist of sayings, doings, and relations, all serving the purpose of the practice. These elements are enabled or limited by specific conditions, including cultural-discursive arrangements, material-economic arrangements, and social-political arrangements.

These conditions and interactions across various elements have a significant influence on the practices, and it is through these interactions that the unfolding of practices occurs within specific sites. In this article, we explore the material-economic arrangements described by Kemmis (2022) in the context of PE. We gain valuable insights into their influence on PE content in Norwegian schools through a focused examination of these arrangements. Understanding these material-economic aspects is essential for identifying areas of improvement and enhancing the overall PE experience. The material-economic arrangements interact with the doings (activities) of a practice and can be evident and apparent, but may also be framed by unacknowledged circumstances, and in contrast to the memories of participants, the material-economic arrangements of a site develop their own pattern over time.

Changing the material-economic arrangements of practice may result in better or different outcomes. For example, the circumstances (such as time and equipment) in which teachers work may need to be changed (Kemmis, 2022). The purpose of this theoretical framework is to assist researchers, as well as participants in everyday practices, in demonstrating how practices with unforeseen consequences affect our lives. Such practices may be irrational or unreasonable, not productive or sustainable, or unjust or undemocratic. Although actors construct their own practices, actors are also shaped by the decisions and actions of many others. Therefore, they are not solely responsible for these practices. Practice architecture describes how people's practices are partly enabled by the social world in which they live, which provides them with the tools and resources necessary to engage in their activities (Kemmis, 2022). Teacher practice is not the only barrier that influences student outcomes. The conditions in which a teacher acts, such as the equipment, facilities, and resources that he or she has at their disposal, also play a role. Changing individuals' actions is not enough to transform a practice; it is also necessary to change the architectures that permit or inhibit it (Kemmis et al., 2014). In most cases, the material-economic arrangements at a site already indicate what kind of place it is and what kind of activities and work normally take place there. The equipment and facilities found in a gymnasium can be tailored to specific sports. In regard to material things and the activities they facilitate, Kemmis (2022) refers to the setting or landscape of this activity area as an "activity-scape." Material objects found there may have been developed for specialized tasks that are performed there (e.g., a gymnasium is an activity-scape that provides physical equipment designed to facilitate specific activities) (Kemmis, 2022).

Research questions

Research on Norwegian primary PE's content (types of activities in lessons) is limited. Furthermore, there is a need for more knowledge on how external factors influence primary teachers' content selection in their PE lessons. This study examines teachers' self-reported content in their PE lessons and the external factors they perceive as decisive for their content selection, seen through the lens of the material-economic dimensions of practice architectures theory. The research questions for the study are:

1. RQ1: What activities do Norwegian PE teachers include in their classes in grades 1–4?
2. RQ2: What external factors are, in Norwegian PE teachers' perspectives, influencing the content of their PE classes in grades 1–4?

Method

We utilized a mixed-methods approach, combining quantitative questionnaires and semi-structured qualitative interviews. Following the approach proposed

by Schoonenboom and Johnson (2017), our design was qualitatively dominant (QUAL + quant) due to the greater emphasis on in-depth qualitative data. The questionnaires provided a large dataset, offering insights into content selection trends, while the interviews delved deeper into participants' experiences, attitudes, and factors influencing content selection.

Development of survey and interview guide

Select survey, an online tool designed by the authors' university, was used to construct the survey. Before conducting an extensive study, two experienced PE teachers conducted a small pilot study to test and refine the survey questions and format. Eight PE teacher educators (PETEs) also provided feedback. Based on feedback, we amended the wording to ensure all respondents understood. Piloting the survey provided helpful information and strengthened the validity of the instrument. We developed the survey based on earlier research regarding PE, the Norwegian PE curriculum from 2015, and two other studies (Kougioumtzis, 2006; Moen et al., 2018). The survey had five parts: (1) demographics, (2) importance of the subject in schools, (3) lessons, (4) curriculum, and (5) other questions. The questionnaire included mainly closed-ended questions. Four-, five-, and six-point scales were used to grade responses. In this article, we present findings from two specific questions included in the questionnaire, which were introduced by explaining the scale's values/labels. The questions were as follows: What types of content do your students typically encounter in your lessons? Respondents reported on 11 activities using a 6-point scale ranging from 0, 1–2, 3–4, 5–6, 7–9, to 10+ times a year. What factors are decisive when you choose content for your lessons? This question consisted of eight sub-elements, and each sub-element was rated on a four-point scale ranging from 1 (not decisive) to 4 (very decisive). In this study, we employed simple 4- and 6-point scales at an ordinal level for the questionnaire. Using these scales was determined by the specific purpose of the study, which did not require an in-depth or precise measurement of activities. The intention behind utilizing a straightforward scale with increasing values was to facilitate teachers' reporting of activity frequency in a clear and accessible manner.

In addition to collecting data through the questionnaire, we conducted nine qualitative semi-structured interviews with teachers. The interview guide was divided into three sections. Section one contained an introduction, an explanation of the issues of confidentiality, the reasons for audiotaping, and a statement of the participant's rights. Section two included questions about teachers' views regarding the content of their PE classes, how and why they plan and organize their classes in the way they do, as well as their perception of the national PE curriculum and its goals. In the third section, there were some questions to ensure that the researcher and the interviewee had understood each other, as well as an opportunity for the interviewee to add other comments or insights. The interview guide was designed to be flexible so that the participants' experiences and relevant issues could be collected.

Data collection procedure

For the survey, we aimed to recruit PE teachers who taught primary PE in Grades 1–4. In June 2019, a link to the survey was e-mailed to all 2500 public primary schools in Norway (based on a list from the Norwegian Directorate for Education and Training). The schools’ public e-mail addresses were used, and each recipient was asked to forward the survey link to all PE teachers currently teaching Grades 1–4 at the school. An exclusive register of PE teachers in primary schools in Norway does not exist. Thus, it is impossible to calculate either the population size or the response rate. This limitation prevents us from generalizing the overall population of PE teachers in Norway. However, we aimed to maximize the participation of relevant PE teachers by using this recruitment method, acknowledging that those who completed the questionnaire may belong to a specific subgroup with a strong interest or involvement in the subject matter. Therefore, caution is necessary when interpreting the results.

Two weeks after the first e-mail, a reminder with the link to the survey was sent. By the time the survey was closed after four weeks, 690 respondents had completed the questionnaire. The respondents were informed that they gave their consent by answering the survey and clicking “finish” on the last page. Among the 690 respondents, 240 did not click “finish,” and their responses therefore had to be removed from the initial number. In addition, two respondents were removed because they did not provide any demographic data.

Participants’ characteristics

The final sample consisted of 450 participants teaching primary-level PE in public schools in Norway in 2019 (Table 1).

Table 1. Overview of participants’ demographic characteristics

Characteristic	Description
Age range	20–66 years old
M age	39.4 years old (SD = 10.9)
Gender	
Male	67.5%
Female	32.4%
Education level in PE	
No formal education	42%
15–30 credits	24.44%
60 or more credits	31.6%

Characteristic	Description
Education level	
General teacher education	65.8%
Preschool teacher education	13.6%
Specialist teacher education	16.7%
No formal teaching education	3.8%
Years of experience	
1 or <	26.1%
2–5	19.4%
5–16	31.5%
>16	23%

In the questionnaire, participants were invited to take part in an interview. Those who expressed their consent by answering “yes” were considered willing to be contacted for an interview. Out of the total sample, 115 participants agreed to be contacted for an interview. From this group, nine individuals working at nine different primary schools were purposefully selected to ensure diversity in terms of age, education level, gender, teaching experience, grade level, school size, and location. This selection aimed to capture a range of perspectives and experiences within the participant pool.

Table 2. Overview of information about the participants in the interviews

Name	Age	Gender	Experience (Years)	Education Background
Roy	41	M	15	PE (Bachelor’s)
Emma	51	F	25	PE (Bachelor’s)
Elsa	43	F	19	PE (Bachelor’s)
Max	28	M	4	PE (Bachelor’s)
Adam	60	M	30	PE (Master’s)
Jill	40	F	16	PE (60 credits)
John	39	M	10	Teacher’s degree
Rose	49	F	23	Teacher’s degree
Axel	39	M	12	Teacher’s degree

The interviews were conducted, and the audio was recorded using Zoom (Zoom Video Communications Inc., 2016). The interviews lasted between 50 minutes and 120 minutes.

Data analysis of the survey

Two questions from the questionnaire were analyzed (Table 3).

Table 3. Analysis details of questionnaire data

Analysis Software	IBM SPSS (Version 26.0)
Data translation	Norwegian to English
Data visualization	Excel and Power BI tools
Data presentation	Descriptively with percentages
Question 1	What content do your students encounter in your lessons? 11 activities (The activities were selected based on 4th Grade learning goals from the curriculum), and the frequency of these activities was categorized into six ordered categories representing increasing levels of frequency, ranging from 0 times a year to 10+ times a year
Question 2	What is decisive when you choose content for your lessons? 8 sub-elements that was reported on a four-point scale, with 1 indicating “not decisive” and 4 indicating “very decisive”

Data analysis of the interviews

To ensure a rigorous and systematic analysis of the collected interview data, the recordings were meticulously transcribed with the aid of NVivo 12 (QSR International). Capitalizing on the robust capabilities of NVivo, the first author delved into an intensive six-step reflexive thematic analysis as delineated by Braun and Clarke (2021). The following table (Table 4) provides a comprehensive overview of the reflexive thematic analysis process, broken down into its six distinct phases:

Table 4. Overview of the reflexive thematic analysis process in 6 phases

Analysis Process	Description
Phase 1	Became familiar with the data by listening to the audio and reading the transcribed interviews, taking detailed notes and writing transcripts.
Phase 2	Assigned relevant segments of data to codes based on research questions, organizing the codes. In this regard, the practice architecture theory provided a useful lens through which data could be interpreted in a more meaningful manner.
Phase 3	Grouped codes with common concepts or ideas to identify areas of similar meaning. For example, the codes ‘swimming’ and ‘biking’ were grouped together since they both relate to ‘type of activity’.
Phase 4	Reviewed initial themes, identified connections between themes, and addressed potential overlap or lack of consistency. For example, there was a close association between group size and the size of the gymnasium, which led to the merging of these themes.
Phase 5	Refined themes, ensuring they had a strong core concept, and wrote a detailed synopsis for each theme, ensuring that each theme was named descriptively and in a captivating manner. The final themes arising in this study are based on informant’s expressions of the most crucial factors influencing their choice of content in PE teaching. The three themes are: <i>Size matters</i> (including codes such as class size, number of teachers, gymnasium size), <i>Resources aren’t on your side, but it works</i> (lack of equipment, economy, types of equipment) and <i>I don’t have time</i> (time to plan, time available in the curriculum, prioritizing other subjects, time to do the classes).
Phase 6	Completed a formal write-up, turned the analysis into interpretable text, and discussed examples from the themes in relation to research questions, earlier research, literature, and the theory of practice architectures. We delved into specific material-economic arrangements relevant to our research.

The quantitative and qualitative data were analyzed separately to understand primary PE content and its influencing factors comprehensively. This mixed-methods approach enriched our interpretation of the findings, allowing us to address the research questions from multiple perspectives and enhance our understanding of primary PE content and teachers' viewpoints.

Ethical considerations

The study was approved by the Norwegian Centre for Research Data (the Norwegian National Data Protection) before any data were collected. School management was asked to forward e-mails to PE teachers and in that way acted as a door opener (Lindsay, 2010). In the e-mail, there was information regarding the aim of the study. The teachers participated voluntarily in accordance with the aim of the study, and they were informed that they could leave the survey at any time. They were informed of their rights and the ethical implications of participating in the study and gave their informed consent by clicking "finish" on the last page. Before the interviews began, gave the participants oral information about the interview process. During the transcription of the interviews, we anonymized the participants by inserting fictitious names. Other identifiable data, e.g., the name of the workplace, where they completed their education and the name of their hometown, were removed. All audio recordings were deleted after they were transcribed.

Results and findings

Survey results

Content of primary PE lessons

To determine what content is taught in Norwegian primary PE classes, we asked the teachers to rate the yearly frequency of 11 randomly ordered activities from the competence aims in the PE curriculum.

Play and ball are the most frequently taught activities. These activities were taught more than ten times per year by 70% and 65% of teachers, respectively. As shown in Figure 1, 41% of the teachers taught swimming to their students more than ten times per year. However, 25% of the teachers answered that they never taught swimming. The results also show that many teachers did not teach cycling, alternative movements, or orienteering, with 49%, 36%, and 21% never teaching these activities.

External factors for the content of primary PE lessons

To determine how external factors influence the content of PE lessons, we asked the teachers to rate 8 external barriers on a scale as not decisive, slightly decisive, quite decisive, or very decisive for their selection of content.

The results show that several external factors influenced the content of PE lessons; the amount of time available, the size of the group, and the equipment available in the gym were the most decisive barrier for the teachers in this study.

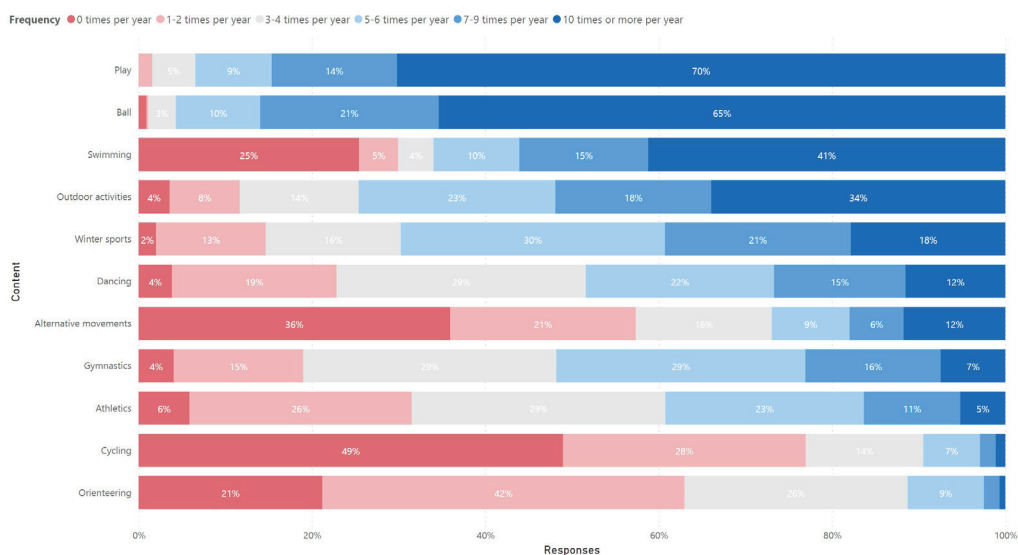


Figure 1. Percentage of how often each of the 11 PE activities is taught per year ($n = 450$)

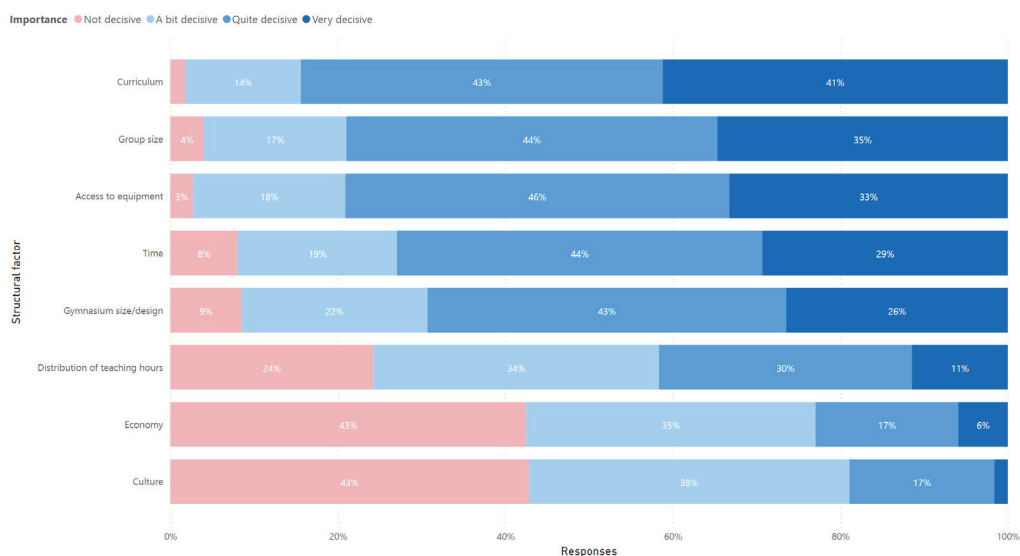


Figure 2. Percentage of how external factors influence the chosen content in PE ($n = 450$)

Interview findings

To obtain a deeper understanding of the content of primary PE lessons and what influences the choice of content, we interviewed nine teachers. The analysis of the interview data revealed three main themes: (1) *Size matters*, (2) *Resources aren't on your side, but it works*, and (3) *I don't have time*.

Size matters

The lessons took place in gymnasiums with classes of approximately 25 students. Participants consistently highlighted the challenges of managing large class sizes, its implications on the quality of teaching, and the potential benefits of smaller groups.

For instance, if I had had fewer, smaller groups or fewer students in the group, I would have been able to help more those who fail gymnastic exercises, the type of activity that is a bit challenging. The way it is now, I have to show it, and then I am able to help those who need it, but I do not necessarily have time to help those who need a little help. (Axel)

Echoing Axel's sentiment, Emma emphasized the difficulties of providing individualized feedback in large classes, challenging her opportunity to give feedback on techniques across various activities, especially when faced with a class of 37 students. Meanwhile, Max expressed that large class sizes restrict the kinds of activities he could conduct, particularly with younger students in Grades 1–4. He underscored that being the sole teacher for a class of 20 to 30 young students limited the scope of activities, making it impossible, for instance, to embark on orientation tours.

Class size is problematic and constrains the activities that teachers feel they can include in their lessons. Following up on this problem, the teachers offered suggestions such as having an extra teacher or choosing more collaborative activities as a solution to make teaching easier.

We can play soccer on small goals so that you get two different football matches. Therefore, having two teachers in the PE class is an advantage. Being a referee on both sides is difficult. (Rose)

I include many team/collaboration activities because I have large groups. But I don't think I have any specific activity. If I had to choose one, it might be dodgeball, since it includes so many. (Max)

One barrier that made teaching activities with large groups even more difficult was the size of the teaching space (e.g., the gymnasium).

Because the gym is so small, I can't split it into two. Before, there was such a solution, where you started something self-driven on one half, and then did something that needed instructions on the other half, but our gym is too small, so I have to get everyone to do the same. (Axel)

Apparently, a combination of small gymnasiums and a large number of students limited the quality of PE. It seems to be complicated to give students feedback, especially when the groups are large. For teachers, group sizes and physical spaces are fixed barriers that cannot be changed, and it is therefore easier to change the content of lessons to fit the barriers.

The resources aren't on your side, but it works

Available equipment is also an important barrier for teachers' abilities to choose content in PE. The results show that teachers often select activities based on the

equipment they have. “I can choose to vary it, so I do not just have football. It is not specifically stated in our plan that you should play handball or basketball. But this is the gym equipment we have” (Jill).

Most teachers reported that their equipment was monotonous and that the lack of equipment relegated them to a limited selection of content, while some teachers were less affected by the availability of equipment.

Our lack of equipment will not prevent us from having good activities; it’s really a bit of imagination that sets the limits. It would be silly to say that teaching could become much better if all kinds of equipment were available. (Elsa)

Nevertheless, even though the teachers used creativity to overcome the lack of proper teaching material, they were also frustrated by old and worn-down equipment and indicated that more equipment could benefit the diversity of activities.

But when something becomes damaged or looks too bad, for sure you wish that it could be upgraded. It would not be fair to simply blame the equipment. However, maybe you could have tried something you have not before. But there are a thousand other things to do anyway. (Elsa)

The teachers emphasized that they had limited teaching resources because of the costs of equipment, especially large traditional pieces of equipment such as pommel horses, vault boxes, safety mattresses, and timber benches.

I wish we had a little more money to buy equipment. We had high-jump stuff, but when it broke, it took a long time before we could buy a new one. And the safety mattress got broken. And then it was a long time before things got sort of right again. Of course, it is quite expensive stuff too. It would have been nice to have better financing to buy the equipment. Also, there are not enough balls. I do not think there is enough equipment. (Jill)

Some teachers also mentioned that it is challenging for both primary-aged children and teachers to use heavy equipment, and more time is often needed to move it in and out of the gym.

It is sometimes necessary to put all the equipment out during your spare time, then put it back and clean up afterwards, also during your spare time. It is hard for first graders to lift and carry heavy objects [...] they are not able to handle everything. Even a bench is too heavy. PE has a lot of lifting and heavy things [...] As a single adult, you must tidy everything in the gym and some of the gym equipment is quite heavy. Sometimes, I feel that this limits you. It would have been easier if you had two adults, one of whom could find the equipment while the other collected it. Then, you would have more energy for other things. (Jill)

For some outdoor activities, the teachers depended on the children to bring their own equipment, and it was challenging that students did not have this equipment.

Suppose we cut out skiing, cycling, and other stuff. We know that there are students who do not have the equipment for this. So, there should have been an equipment pool in schools. We have been talking about that and I would like to have a storage with skates, skies, and bikes, as a reserve. Maybe that is the future, getting a bit more equipment. (Emma)

I don't have time

Time, both for planning and for teaching PE lessons, was highlighted by the teachers as important for ensuring the quality of PE content. One issue was the size of the PE subject compared to other subjects they taught. They had to prioritize within their overall time for planning.

If you do not have enough time and have prioritized other subjects, then PE is easy to do as usual since we have done the same things before. It is sometimes okay to do that, but if it happens too often, it becomes a way to just keep them entertained. In PE, they must learn something as well, just like in other subjects. But time is a constraint. (Max)

Another issue was the average length of PE sessions, which usually lasted 45 minutes. Teachers indicated that this may not be sufficient and that they struggle even when lessons are longer.

You know what; I usually say that PE sessions are too short. And we even have classes that are one and a half hour. We are lucky compared to how it was. I remember the first years I taught PE, and then the lessons were even shorter. It takes time to change clothes, and it takes time to shower. We for sure need the one and a half hour. (Emma)

Several of the teachers mentioned that the lessons were too short to even conduct the lesson. In some instances, this results in saving time to occasionally arrange whole days of PE, rather than providing PE throughout the school week.

A few years ago, I had two hour and fifteen minute PE lessons, and it was great! Then, I could arrange a 20-minute warm-up and plenty of time for a good middle part where I could teach different activities; even manage to include two different activities. In addition, some good closing activities. Whereas now, it is often more often like [...] they put you up with a 45 minute lesson on two different days [...] I would rather save up the PE time and arrange a whole day of PE instead. PE requires plenty of time to complete a good session, and there is not enough time for that. (Axel)

Basically, we just have whole PE days with gym. We can do that in math too. This is quite good because you can then go to a sports arena to engage in other activities. Jump some lengths, run 60 meters, kick football on a big field. That's something I think is fun. To have whole days like that. (Emma)

Discussion

This study pursued two primary objectives: to examine teachers' self-reported content in their PE lessons and the external factors they perceive as decisive for their content choices. The results of the survey revealed that most teachers' primary choice of activities in PE lessons were ball-related activities and play (for example, dodgeball and playing tag). Furthermore, during the interviews, the teachers reported incorporating a range of ball-related activities in their PE lessons. Among these activities, dodgeball emerged as one of the most popular choices. Consistently, studies by Moen et al. (2015) among teachers in Grades 5–10 and Säfvenbom et al. (2015)

among students in Grades 8–13 in Norway indicated that ball games, basic training, and play dominated the content of PE lessons. Thus, this study confirms that these activities also dominate PE classes for younger age groups. This is related to the critical discussion of PE in primary schools (Griggs, 2007; Morgan & Hansen, 2007). The subject has been criticized as being “sportified” (Green, 2008; Naul, 2003) and as traditionally consisting of sports activities and different ball activities (Hardman & Marshall, 2005; Ward & Quennerstedt, 2014). It is important to remember that certain activities will suffer if teachers concentrate only on a few (Petrie, 2016).

Relatedly, we found that alternative movements like skateboarding, parkour, yoga, and climbing, were rarely or never discussed, or offered as content in PE lessons. This is in accordance with Standal et al. (2020), who found that teachers primarily use sport and ball games as examples during lesson explanations. Since the Norwegian curriculum emphasizes not only traditional activities but also nontraditional physical activities such as skateboarding and parkour (Utdanningsdirektoratet, 2015), the content reported by the participants in our study does not correspond to its purpose. Linde (2012) points out that teachers often do not teach the content outlined in the official curriculum, which is consistent with this finding. The teachers in our study reported that some competence goals were provided only occasionally or never to their students, including swimming, dancing, cycling, orienteering, and alternative activities. Dance, skateboarding, yoga, parkour, and climbing are also underrepresented, according to Moen et al. (2018). The lack of focus on all aspects of PE has also been reported in research from other countries, including by Larsson and Meckbach (2007), Liljekvist (2013), and Morgan and Hansen (2008). This indicates that teachers in a variety of countries struggle to fulfill the requirements for what content they should offer students in PE. While the Norwegian curriculum emphasizes the importance of both understanding and valuing physical activity (MER, 2015), our findings reveal that the content in PE classes is restricted and does not align with the curriculum’s expectation for a diverse range of activities. Consequently, students are unable to acquire the knowledge and experiences that would be beneficial for their future development as outlined in the curriculum. Since PE at the primary level is an important part of promoting lifelong physical activity (Naylor & McKay, 2009), there is reason to be concerned about Norwegian primary PE. PE is critical in establishing a foundation for sustained participation in physical activity throughout one’s life (Naylor & McKay, 2009). A diverse range of physical activity experiences must be provided to children and adolescents to achieve this goal (Engström, 2008). Individuals evolve in their motivations and purposes for participating in physical activity as they progress through various life stages. Primary PE curriculum must include a variety of exercise experiences to meet these changing needs. By providing various activities, students can explore different forms of physical activity and discover what resonates with them, increasing their likelihood of continuing to engage in physical activity for a long time (Engström, 2008; Green, 2008).

In the present study, we also aim to explore the external factors influencing teachers' choices of content in PE. To do so, we utilize the material-economic dimension of the practice architecture (Kemmis et al., 2014) as a theoretical lens. Material-economic arrangements as described by Kemmis (2014) are the resources that cause actions in practice; these arrangements enable or constrain the doings of primary PE (e.g., when access to the equipment changes the actions in the gymnasium). Seen through Kemmis' (2022) theory of practice architecture, it is unreasonable to blame the narrow content of primary PE solely on teachers. The results of this study show that the material-economic arrangements among the various sites were mostly similar, although there were some variations. We identified four barriers constraining practice: time, equipment, group size, and gymnasium size. These factors are similar to the external barriers/constraints for teachers that have been described by other researchers both in the Norwegian context (Moen et al., 2018) and in the international literature (Curtner-Smith & Meek, 2000; Morgan & Hansen, 2008; Smith & Parr, 2007).

To facilitate a comprehensive discussion on the material-economic dimension of practice architectures (Kemmis, 2022; Kemmis et al., 2014) and its implications for PE, we have organized our analysis of the interview data into three distinct themes: (1) *Resources aren't on your side, but it works*, (2) *Size matters*, and (3) *I don't have time*.

1) Resources aren't on your side, but it works

The interview findings revealed that available equipment was one of the important material-economic arrangements for teachers. According to the theory of practice architecture, a practice's equipment can be considered an aspect of its actions (Kemmis, 2022). PE teachers can therefore make choices based on the equipment they have at their disposal. In our interview findings when the teachers explaining their emphasis on activities involving balls, such as soccer, handball, and basketball, the teachers said that they often select ball-related activities because they have the equipment required for these activities. In our survey results biking was identified as an activity that was almost never included as content in primary PE, and Emma explained in the interview that students do not have the proper equipment for biking. In the same way, in the interviews the teachers also expressed skiing as limited by students' lack of equipment. Emma suggested that this could be resolved by providing a pool of equipment in the school. During the interviews, the teachers used examples of equipment that was quite old and traditional. For instance, they talked about vaulting boxes being too expensive to replace if they broke. In addition to having access to only certain pieces of equipment, the teachers used this traditional equipment as an example when talking about handling equipment. In particular, the female teachers noted that the equipment was too heavy to lift. This posed a particular challenge for teaching in the primary years because the students were too young to assist with all the heavy lifting. The teachers solved this by arranging the equipment in their spare time before the class started. Alternatively, they chose other types of activities.

According to the theory of practice architecture (Kemmis, 2022), the arrangement of materials at a site is not influenced by the memories of participants, but rather by a pattern embedded in the arrangement itself. Therefore, teachers are not solely making decisions based on their experience of what they think they can do or not do. The gymnasium can be seen as a specialized landscape, or “activity-scape,” in terms of the activities and work that take place there. Some of the items found there may have been tools developed for the specific type of work being done there (Kemmis, 2022), such as the equipment, layouts and set-ups in the gymnasium. In this way, the practice is guided by the architecture of the gymnasium and the materials available there. Considering the constraints faced, diversifying teaching methods beyond traditional gymnasium equipment is crucial. For example, equipment such as slacklines and skateboards, which is less expensive and more accessible than many traditional items, align with curriculum goals, yet are often overlooked in current practices.

2) Size matters

In the interviews, most of the teachers indicated that both group size and the size of the gymnasium pose challenges when selecting content. Additionally, several teachers expressed difficulty managing large groups of students because of the small gymnasium. Their classes usually consisted of approximately 25 students. In contrast, Lundvall and Meckbach (2008) reported that teachers distributed content similarly regardless of the facility’s limitations. Teachers in our study revealed that having student groups that were too large prevented them from providing feedback and guidance to students. Teachers also indicated that the content might not change if they had smaller groups but that they would have more time to assist those who were experiencing difficulties. They also expressed a desire to have more than one teacher to help manage large student groups. The ability to referee two soccer matches simultaneously was given as one of the reasons for wanting this arrangement. However, the teachers also stated that class sizes affected content, stating that they were only able to “just be together.” As one of the teachers explained, there was not enough space in the gymnasium to divide the group into two when the student group was large. It is evident that the combination of both architectures (Kemmis, 2022), small space and large group size, makes it even more challenging. Consequently, the teacher was not able to give different assignments and instructions to the students. As a result, they changed the content, choosing more collaborative games. This could explain why the teachers taught a narrow content that only focused on some parts of the curriculum.

Based on the results of the survey, we found that teachers rarely presented orienteering to the students. In the interviews, Max explained how orienteering outdoors with nearly 30 students would not be safe. To cope with the large student group, he chooses team collaboration activities such as dodgeball, which is justified as a practice because it encompasses many students. Since he cannot alter the conditions by reducing the number of students in the group, he changes the content. Seen through Kemmis’ (2022) theory of practice architecture, it is unreasonable to blame the

narrow content of primary PE solely on teachers. If they do not have access to adequate facilities, they may struggle to provide a content in line with the curriculum.

3) I don't have time

Like previous research (e.g., Mandigo et al., 2004; Moen et al., 2018), our interview findings, revealed that time was a significant constraint in delivering PE. According to interview findings, the allocated time for PE lessons is often insufficient to ensure high-quality instruction. In some cases, it may take longer to initiate specific activities. For instance, teachers need more time to organize skiing lessons due to the travel time required to reach suitable skiing locations.

In line with Moen et al.'s (2018) study in Norway, our interview findings reveal that PE classes primarily take place in sports halls or gyms and are constrained by limited hours. Consequently, students are unable to participate in a comprehensive array of physical activities, including outdoor ones. This limitation necessitates attention and intervention to ensure a broader range of physical experiences for students. The issue at hand is concerning because existing literature, such as Engström's study (2008), highlights the importance of offering diverse experiences in PE to foster student motivation and long-term participation. It's worth noting that modifying the actions of individuals involved and adjusting the practice architectures that permit or restrict those actions can transform practices (Kemmis et al., 2014). Due to time constraints, teachers have implemented new practice architectures by dedicating entire days to specific activities, such as ski days, activity days, and PE days. This allows for a change in conditions, including allocating more time for particular activities and providing the opportunity to explore different locations. Embracing interdisciplinary teaching offers another avenue. By linking PE with subjects like geography or science, activities such as orienteering or nature exploration can be integrated into regular lessons, without the need for full-day events. This not only provides diverse content but also offers ways to use environments outside the traditional gymnasium, reducing dependency on typical equipment and spaces. While dedicated physical activity days have demonstrated efficacy in select scenarios, their integration can be challenging within densely structured school timetables. This is often the case when educators contend with extensive commitments. Nonetheless, it is imperative to acknowledge the potential benefits of such interventions. The reconfiguration of practice architectures, as proposed by Kemmis et al. (2014), can substantially augment the PE experiences of students, whether through comprehensive day-long events or the adoption of interdisciplinary methodologies. By introducing a variety of teaching locations and diversified activities, this enhancement is further enhanced.

Conclusions

Understanding primary PE content from educators' perspectives is essential for fulfilling the curriculum's objectives and fostering a lifelong joy of physical activity.

This study focused on teacher perceptions and external factors shaping the content in PE. By employing Kemmis' theory of practice architecture's material-economic dimension (2022), we gained a deep insight into the interplay between resources and pedagogical decisions.

We have identified several key constraints that affect the variety and creativity of PE classes' content. These include limitations on resources and equipment, such as an overreliance on ball-related equipment and a lack of access to diverse facilities. Logistical challenges, such as limited gymnasium space and large student groups, also steer teachers towards certain activities, like dodgeball. In addition, time constraints limit PE instruction quality and diversity, especially outdoor activities.

Our results highlight that lack of variety in primary PE content in Norway is not solely based on teachers' choices. Material-economic conditions significantly influence the content. These findings underscore the need to address these challenges in a diversified PE curriculum. The present study's results provide a deeper understanding of the complexities faced by primary PE educators, emphasizing the pressing need to address material-economic challenges. While material-economic factors play a significant role, cultural and political contexts is also expected to influence PE content. Future studies could further investigate these aspects and their impact on PE practices.

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