

兒童在教室裡的動作學習

Movement and children's learning in the classroom





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丹麥的學生必須每天有45分鐘的動態活動。 活動的時間不再僅限於體育課,而是要能整合納 入到各個學科當中。這對丹麥學校制度來說是一 項巨大的挑戰……



背景

本文的撰寫是基於在2016年 2月在臺北市和新北市的體育諮 詢團隊的訪問,以及在國立臺灣 **師節大學和南丹麥大學的合作**, 舉行為期4天的教學演示、工作 坊和小組討論的內容。本文旨於 介紹丹麥學校中,如何將動作與 學習結合。丹麥最近通過了一項 新的改革/政策,明文指出所有 丹麥的學生必須每天有45分鐘的 動態活動。活動的時間不再僅限 於體育課,而是要能整合納入到 各個學科當中。這對丹麥學校制 度來說是一項巨大的挑戰,因為 許多教師缺乏這方面的能力。因 此,動態活動需要在體育課以外 更廣泛的背景下思考,所有丹麥 中小學的教師(對於6~16歲的 學生)需要發展自身在這一方面 的能力。

動作和學習:研究告訴我們什 麼?

斯堪地那維亞的研究顯 示,以有目標的方式增加學生的 身體活動,對於他們在情緒和計 會過程,以及在學習能力上有正 面的影響。Bunkeflo計畫已顯示 出身體活動對學習和全人福祉 (wellbeing)的目標有顯著影響 之結果,國際研究則顯示出相同 的方向。2011年,國際研究人員 在丹麥開會,嘗試並辨識動作與 學習之間的關係。在思考了此議 題的國際研究後,研究人員得出 研究文獻的結論:不論年齡差 異,身體活動和學習之間有重要 的關連。身體活動促進認知能 力,包括問題解決、邏輯思維和 注意力。而且,身體活動可成為 協助心理、情緒和社會過程的正 向發展工具。此外,如果身體活

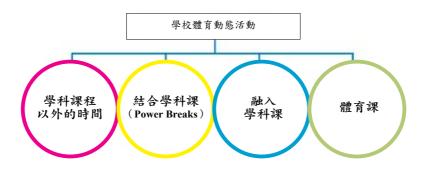


圖1 在學校中的動態活動分類圖

動具有挑戰性和多樣性,則更可 將學習最佳化。

五年後,國際研究人員於2016年在丹麥再次開會,並對兒童、青少年和身體活動的相關議題有了更深入的研究。 目標主要是就兒童和青少年的身體活動,對健康、全人福祉和學習的影響達成一種以證據為基礎的新共識。研究人員再次做出結論:學校的身體活動提高了學科Norris等人(2015年)的支持。因此,學童對於基礎動作技能的掌控,對於有利於他們在學校中的認知和表現。此外,研究結果亦指

出,學校全方位教育的作法(a holistic school approach)是一種有效的戰略,使學生有公平的機會參與身體活動並增加身體活動。

基於此背景,上述研究顯示,需要有一個關於動作的全方位教育作法。 在下面一節的主題中,將進一步解釋動作如何融入丹麥學校的日常運作中。

丹麥學校中的動態活動

圖1說明我們如何將學校裡的動態活動進行分類:左邊第一個紅圈「學科課程以外的時間(separated from the academic lessons)」是指可以納入學校日



圖2 power breaks示意圖

常運作的動作,舉例而言:學生的晨跑。右邊第一個綠圈主要是指「體育課(physical education)」,在丹麥體育有獨立的課程和體育會考。丹麥學校每週則有二至三節的體育課。然而,本文重點介紹中間的兩個類別:「動作與學科課的結合/融入(movement combined/integrated in the academic classes)」(中間的黃色和藍色圈子)。這兩個類

別重點主要是在教室裡,將動作 與一般的課室教學的學科內容作 結合。

動作結合學術類 (Power Breaks)

「動作與學科課」的結合 類別也被稱為Power Breaks(指 強而有力的休息方式)。一個 Power Breaks的特徵是短暫的時 間,常使用在當學生需要從學 科內容中休息時,可以主動進

- /或肌力。
- 二、動作技能:注重協調、平 方向感。
- 三、認知:注重意識、理解規 力和創造力。
- 四、情緒:注重於學生的動機、 意志、勇氣和參與。
- 五、社會:注重合作、溝通、包 擔責任。

「動作的樂趣」是這五個 學習面向的核心,並且是動態休 息和動作活動的基礎。老師可以 選擇單特定的一個學習面向或選 擇同時包含好幾個學習面向的動 態活動。此外,亦可使用相同活 動並加以變化,改變不同的學習

行。 在丹麥, Power Breaks需要 面向,以達到不同的教學目標。 注意的重點,我們以圖2說明。 以下提供可在動態休息時間玩的 一、身體:注重體適能、耐力和 球類遊戲範例(註:括號內之概 念為著重的學習面向)。

一、圖形球

- 衡、本體感受、空間感或 (一)器材:不同種類的球和一 些其他的器材;角錐, 號碼衣等。
- 則、問題解決能力、想像 (二)空間需求:學生站在一個 5~12位學生所圍起來的 圓圈裡,有足夠的空間 允許學生能夠進行傳接 球的動作。
- 容、以及在一個團體內承 (三)說明:學生站在一個圓 圈,「圍成」圖形,使 每個人都成為圖形的一 部分。圖形隨時保持不 變,意思是指學生從同 一個人接球,並且每次 也是同一個人投擲。 無 論圖形藉由誰投球的方 式開始他也是圖形中的

最後一個人。 之後, 球一次又一次地圍繞該 圖形,而難度隨著以下 變化而增加。 (學習重 點:動作技能、對規則 的理解、協調、方向 感、團隊合作和溝通)

- 1. 投擲數個球。(協調)
- 2. 單腳站立同時將球投出。(平衡)
- 3. 當球被投擲出時,你要蹲下或是做兩個伏地挺身。 (肌肉力量)

- 最後一個人。 之後, 4. 不同類型的投擲和踢: 球一次又一次地圍繞該 低手、反彈球、反手等。 圖形,而難度隨著以下 (運動技能)
 - 5. 改變學生投擲球的地點。 (體適能)
 - 6. 一方面圍繞圓圈傳遞一個物體,一方面順著圖形繼續投擲球。(感覺運動技能)
 - 7. 在小組裡唱一首歌,或編一段故事,同時把球扔在圖形中。(想像力和創造力)

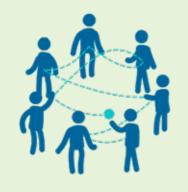


圖3 圖形球



圖4 「數1-2-3」活動特別注重學生 的合作、協調與對規則的理解



圖5 動作融入學科課的5種類別

8. 在最短的時間內盡快完成 二、數1-2-3 間內完成球繞圓圈五次。

Power Breaks用同樣的活動 可以具有一個或多個教學面向, (二)變化:數字1可以用拍手 其可以隨著活動變化而改變,就 像其他Power Break活動一樣。另 個例子是使用更少的空間,在教 室裡就可進行的簡單活動。

- 圖形,例如:在最短的時 (一)說明:學生是兩兩一組, 彼此之間相距一公尺。 學生們必須藉由輪流數 數一起數到3。
 - 代替;數字2可以用雙腳 跳來代替;數字3用數字 2代替。此外,可以在小 組裡面增加成員。

將動作融入到教室的另一 種方式是將動作與學科內容相結 合。為了達成此目的,以下將呈 現一種將動作結合學科內容的教 (二)空間需求:學生坐在椅子 材教法。

動作融入學科課

以下模式的目的,是為增 加精確度和系統結構以整合動作 到學科中。將此模式設計為一個 工具,用來證明在學科課中動作 教材教法的面向。運用更多更新 更有趣更多變的教學經驗,以提 供學生的動作學習是成為學習過 程中重要的一部分。

在下面的章節中,每個類 別用實際例子來說明。

一、玩游戲

這個類別的特點是基於 學科內容的遊戲比賽和遊戲活 動。 玩遊戲的活動特別適合在 學科內容中發展具體的技能,因

為學生有機會重複以及訓練這些 學科內容。範例:水果沙拉。

- (一) 教材:無。
 - 上的一個圓圈,或站立 由角錐/紙張標示一個 地方。

(三)說明:

學生坐在椅子上圍成一個 圓圈與站在中間的一個學生。老 師分別給予所有學生一種水果, 一顆蘋果一顆梨子或一條香蕉。 學生在中間喊指令。「所有的蘋 果都要改變位置」。然後所有的 蘋果必須找到 一個新的椅子,學 生的目的是找到一個椅子坐。沒 有椅子的學生是中間的新學生。 中間的學生還可以喊「水果沙 拉」,這意味著所有代表水果的 學生都必須找到一把新椅子。





圖6 水果沙拉

(四)變化

1. 幼稚園

- (1) 在語文課中,可以用不 同類別的詞取代水果。 像母音和子音,有2個 或3個字母的單詞。
- (2) 在數學課中,可以用奇 數和偶數。
- (3) 在科學課或地理課上, 可以用水中生物或陸地 動物。

2. 小學

以用詞性分組,如名詞 和形容詞。比方說當一 個學生喊「紅色的」則 所有形容詞需要改變座 位,又比方說,也可以 設計喊「男孩游泳」 或「女孩快速航行」 時,就會有更多的詞性 (註:名詞、動詞、副 詞)要移動。全喊出來 就是所有的詞類都需要 大風吹。

(1) 在語文課中,學生可 (2) 在數學課中,類別可

- 以是2倍數、3倍數、5 3.中學 「15」,那麼與3倍數、 5倍數相關的的學生將 不得不起身找到一把新 的椅子。
- (3) 在宗教教育中,類別可 以是佛教,基督教和伊 斯蘭教等等,站在中間 當鬼的學生則可以重要 的宗教節日或宗教人物 來發出指令。

- 倍數等等。如果喊出 (1)在地理上,可以用國 家、城鎮和島嶼。
 - (2) 在生物學中,類別可以 是魚,鳥和蛇。
 - (3) 在語言中,類別可以是 動詞,形容詞和名詞。
 - (4)在社會研究中,類別可 以是社會主義,自由主 義和保守主義,中間當 鬼的人則可以說政治家 或政黨的名字。



圖7 快速配對



圖8 體現

學生在活動期間使用的答 案作為上課優先討論的話題是個 很好的想法。

二、結構化教學

這個類別處理在不用融入 遊戲的情況下如何使用結構教 學,以確保學生離開他們的座 位, 並且能使用到整個教室的空 間,而不包括遊戲的方面。它特 別關係到任務的組織。例如。在 課堂上積極的組織小組工作的方 式。範例:快速配對。

- (一) 教材:無。
- (二)空間需求:學生站在一 個圓圈裡。

(三) 說明

一半的學生站在一個圓圈 裡另一半的學生在外面圍成圓 圈,在外圈的同學轉身與內圈相 對應的同學面對面。要求學生與 他們的合作夥伴握手,以確保每

相關的問題或任務,在短時間 (如2分鐘)內進行討論。當時 間到時,外圈向左移動一個位 置。然後老師問同一個問題或一 個新的問題,將與新的合作夥伴 討論。活動還可以坐在椅子上進 行, 前目可以透過來自外圈和內 圈的學生交替地向右移動一個地 點而進一步變化。

三、體現

這個類別的特點是學生透 過活動直接「體現」他們正在使 用的學科。在這裡,學生在數學 領域工作,例如幾何學。 學牛 們用他們的身體物理建構一個 圓圈。 學生還可以製作其他形 狀,如正方形,矩形或三角形。

四、情境練習

此類別處理有關學科情境 和環境中的動作活動。在此,活 動有機會融合在地自然環境與戶 個人都配對。老師給出一個主題 外活動。比方說戶外的數學課,

學校體育

可以讓學生實際用數學儀器、概 念去測量在遊戲場中不同的角度 數據。

五、創意/美學學習活動

此類別所處理的動作活動,特別關注於創意、美學和生產面向的動作活動。 在這裡,學科內容以一種不同的創意的方式整合,如音樂、戲劇和表現活動的形式。這方面的例子是,學校作業丹麥作家安徒生的童話故

事,戲劇活動就被包含在內。學 生可以詮釋和演出其著名的童話 之一,如醜小鴨。

最後,我們希望本文能夠 深入了解動作如何融入丹麥學校 課程當中。對於結合動作和學習 的方式,希望能帶給讀者靈感和 新的想法。最後,我們也期待丹 麥和臺灣學校與大學之間的未來 合作。

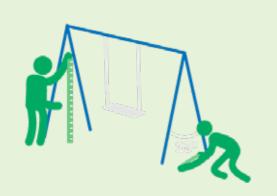


圖9 情境練習

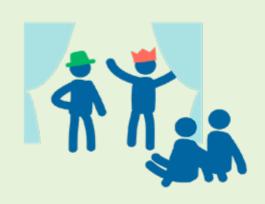


圖10 創意/美學學習活動

關於丹麥的二三事

- 1. 丹麥中小學
- ★5歲可上學前班。
- ★基礎教育9年,為大範圍的 學習。
- ★體育為學校科目之一,全 年級皆上。
- ★45分鐘教2-3堂課。
- ★第二個學校主題是健康教育,雖然這個主題沒有分配到上課時間,但應該視為跨科目的主題。
- 2. 丹麥學校的新改革
- ★每天45分鐘運動。
- ★更長、更多樣化的上學日 要搭配更多更好的教育和 學習。
- ★教師、教學助理和校長的 專業發展。
- ★設定明確的目標以及簡化 規則。
- ★9年級體育課考試。

(編註:本文譯自Movement and children's learning in the class-room,由南丹麥大學學院體育和健康促進系國家健康促進知識中心Claus Løgstrup Ottesen副教授、Anders Flaskager副教授、Børge Koch教授應本刊邀約之撰稿。如需更多相關資訊,請聯繫本篇通訊作者Claus Løgstrup Ottesen: cott@ucsyd.dk)

延伸閱讀

Movement and children's learning
in the classroom請至體育署網
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wSitect?xItem=3452&ctNode=2
43&mp=11

南丹麥大學學院體育和健康促進系 國家健康促進知識中心網站: www.vicekosmos.dk

Movement and children's learning in the classroom

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Background

This article is grounded in co-operation with PE Consulting Team, Taipei and New Taipei City, National Taiwan Normal University and University College of Southern Denmark, who took part in a four-day visit with presentations, demonstrations of best practice, workshops and panel discussions in February 2016.

The purpose of the article is to present how movement and learning are combined in Danish schools. A new reform/policy has recently been adopted in Denmark which states that all students in Danish schools must be active for 45 minutes daily. Activity is no longer exclusively located in Physical Education (PE) but should be integrated into all subjects. This is a large challenge for the Danish school system as many teachers lack competency in this area.

Movement activities require therefore to be considered in a broader context outside of PE and all teachers in Danish schools (for students aged 6-16) need to develop their competencies in this area.

Movement and learning - what does the research say?

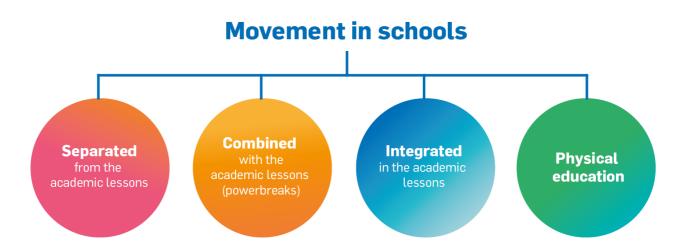
Scandinavian research shows that targeted increases in movement activity has a positive effect on the students emotional and social processes as well as their ability to learn. The project known as 'Bunkeflo' has demonstrated significant effects og learning and wellbeing as a result of targeted efforts (Ericsson, I. 2003; Ericsson og Karlsson, 2014). International research point in the same direction. In 2011 international researchers met up in Denmark to try and agree on the relationship between movement and learning. After considering international research in the area, researchers came to the conclusion that there is a documented connection between physical activities and learning regardless of age. Physical activity improves cognition, including problem solving, logical thinking and attention. Additionally, physical activity can be a tool for a positive development in mental, emotional and social processes. Furthermore, learning is optimized if the physical activities are challenging and varied. (Konsensuskonference, 2011).

Five years later in 2016 international researchers met again in Denmark with a further developed body of research behind them relating to children, youth and physical activity. The goal was to reach a new, evidence based consensus regarding the effects of physical activity for children and young people in relation to health, wellbeing and learning. Once again the researchers concluded that movement in school improves academic and learning performances. This result was in support of Norris et al (2015). It was concluded that control of fundamental motor skills was beneficial for cognition and performance in school. It was also indicated that a holistic school approach is an effective strategy to give the students equal access to physical activity and to increase physical activity (Konsensuskonference, 2016).

The above mentioned research indicated that there is a need for a holistic school approach in relation to movement. In the following section we wish to explain how movement is integrated in the everyday running of a Danish school.

Movement in Danish schools

The following model illustrates how we categorize movement in Danish schools.

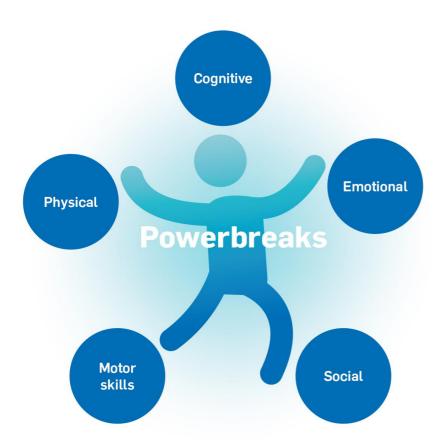


The first category 'Movement separated from the academic lessons' (red circle) refers to movement which can be incorporated in the running of the school day. An example could be a morning run for the students. The last category 'Physical education' (green circle) refers to the subject Physical Education- which has got its own curriculum and exam in Denmark. Physical education has two to three weekly lessons in Danish schools.

However, this article focuses on the two categories in the middle: 'movement *combined* and *integrated* in the academic classes' (yellow and blue circles). These two categories focus on movement which is integrated into the classroom during general teaching where academic content is the focus.

Movement combined with the academic classes (Power Breaks)

The 'movement combined with the academic lessons' category is also referred to as Power Breaks. A Power Break is characterized as a short, active pause which is employed when the students need a break from the academic content. In Denmark, there is a focus on the concept that Power Breaks need to have a focus which is illustrated in the following model:



Physical – with a focus on fitness, endurance and/or muscle strength

Motor skills – with a focus on co-ordination, balance, proprioception, sense of space or sense of direction.

Cognitive – with a focus on awareness, understanding of rules, evaluation of solution or imaginatively and creativity.

Emotional - with a focus on the student's motivation, will, courage and engagement. **Social** - with a focus on co-operation, communication, tolerance and taking responsibility within a group.

The joy of movement is central for these five learning perspectives and should be the anchor for all active breaks and movement activities in general. As a teacher you can choose to have focus on one specific learning perspective or choose an active break that employs several learning perspectives at the same time. It is also possible to change between different

varieties of the same activity to accomplish different teaching goals. The following is an example of a ball game, used in an active break, with several learning perspectives (*italicized below*).

An example: Pattern-ball

PATTERN-BALL

MATERIALS: Different types of balls and some other materials; a cone, a shirt etc.

SPACE REQUIREMENTS: Students stand in a circle of 5-12 students where there is enough room for significant movement and balls to be thrown.

INSTRUCTIONS: Students stand in a circle and 'draw' the pattern so that everyone becomes part of the pattern. The pattern remains the same all the time, meaning that students always receive the ball from the same person and the person they throw it onto is also the same person every time. Whoever starts the pattern by throwing the ball is also the last person in the pattern. After, the ball goes around the pattern again and again whilst the difficulty increases with the following variations.

(Teaching perspectives: motor skills, understanding of rules, co-ordination, sense of direction, teamwork and communication).

- Throw several balls (*co-ordination*)
- Stand on one leg whilst the balls are being thrown (*balance*)
- Go down on your stomach or do two push-ups when the ball has been thrown (*muscle strength*)
- Different types of throws and kicks: underhand, bounce-pass, back-hand etc. (*motor-skills*)
- Change places with the student you throw the ball to (*fitness*)
- Pass an object around the circle whilst simultaneously throwing the ball around the pattern. (*sensory-motor skills*)
- Sing a song in the group or create a story whilst simultaneously throwing the ball in the pattern (*Imagination and creativity*).
- Time how fast you can complete your pattern, for example: 5 times around the group with the ball (*teamwork and competition*).



Power- Breaks can have one or more teaching perspectives which can change as the activity is varied, just like other Power Break activities.

An example of another Power Break which takes up less space and can be easily performed in the classroom is the 'Count 1-2-3' activity:

Count 1-2-3

Instructions:

Students are together in pairs and stand a meter away from each other. The students have to count to three together by saying the numbers alternately.

Variation:

The number 1 is replaced by a clap.

The number 2 is replaced with a jump.

The number 3 is replaced with the number 2.

More students can be added to a group and the amount of numbers could be increased.

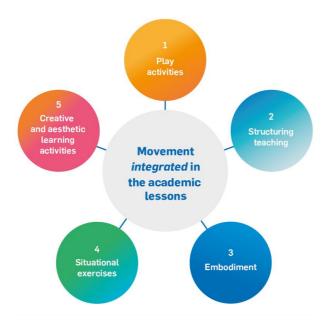


The 'Count 1-2-3' activity has specific focus on the students' co-operation, co-ordination and understanding of the rules.

Another way of incorporating movement in the classroom is to integrate movement with academic content. A didactic model is presented in the following section for this purpose.

Movement integrated in the academic lessons

The intention of the model below is to add precision and a systematic structure to integrate movement into subjects. The model is therefor designed as a tool to justify the didactical perspective of movement in lessons. A more varied teaching-learning experience towards many new and fun ways to learn where the students' movement is an active part of the learning process.



In the following section the 5 categories are described with a practical example within each category.

1. Play activities

This category is characterised by games and play activities grounded in academic content. The play activities are particularly appropriate for developing concrete skills within subjects as the students get the opportunity to repeat and train the academic content.

An Example: Fruit salad

Materials: None

Space requirements: Students sit in a circle on chairs or stand by individual cones/pieces of paper which indicate a place.

Instructions:

Students sit around a circle on chairs with one student standing in the middle. All students are given a fruit to be by the teacher, an apple a pear or a banana respectively. The student in the middle shouts commands e.g. 'All apples have to change place'. Then all apples have to find a new chair and the aim for the students is to find a place to sit. The student without a chair is the new student in the middle. The student in the middle can also shout 'Fruit-salad' which means that all students have to find a new chair.

Variation:

Pre:

- 1. **In language subjects** different word categories can be exchanges for the fruits e.g. vowels and constantans, words with 2 or 3 letters.
- 2. **In maths** the two categories could be even and uneven numbers.
- 3. **In science or geography** the categories could be land animals or water based creatures.

Primary:

- 1. **In languages** students can be split up in word classes such as nouns and adjectives. When a student shouts 'red' (for example) all the adjectives need to change place. More word classes could be used by saying 'The boy swims' or 'the girl sails quickly'. If these are said then all word classes used need to find a new chair.
- 2. **In maths** the categories could be the 2x, 3x or 4x table. If the number 15 was used then students in both the 3x and 5x table categories would have to find a new chair.
- 3. **In Religious Education** the categories could be Buddhism, Christianity and Islam and the student in the middle names a central religious day or a central religious figure.

Secondary:

- 1. In **geography** the categories could be countries, towns and islands.
- 2. In **biology** the categories could be fish, birds and snakes.
- 3. In **languages** the categories could be verbs, adjectives and nouns.
- 4. In **social studies** the categories could be socialism, liberalism, and conservativism where the person in the middle says the name of politicians or political parties.

It is a good idea to prioritise time for an academic conversation about the answers that students use during the activity.





2. Structuring teaching

This category deals with how to structure teaching to ensure that students get out of their seats and use the entire room without incorporating the aspect of play. It relates specifically to the organisation of tasks. E.g. active ways of organising group work within the classroom.

An Example: Speed-dating

Materials: None

Space requirements: Students stand in a circle

Instruction:

Half the students stand in a circle and they turn around with their backs to the middle of the circle. The other half of the students forms a circle around the original circle so that they stand opposite and face to face towards each other. Students are asked to shake hands with their partner to make sure everyone is paired up.

The teacher gives a subject related question or task which they discuss for a short time e.g. 2 minutes. When the time is up the outer circle move one place to the left. Then the teacher asks the same question or a new question which will be discussed with the new partner.

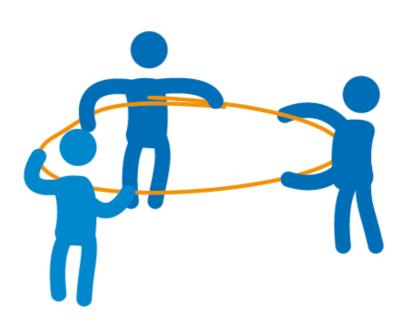
The activity can also be done sitting in chairs and can be further varied by having students from both the outer and inner circles alternately move one place to the left of the right.



3. Embodiment

This category is characterized with activities where the students directly 'embodies' the academic subject they are working with.

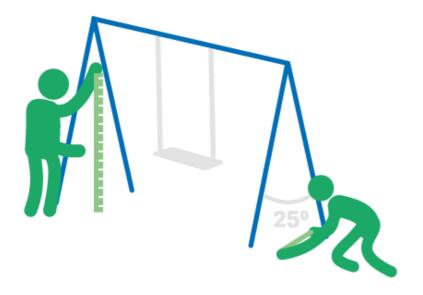
Here students work in maths in an area such as geometry. The students make a physical construction of a circle with their bodies. Students could also make other shapes such as a square, rectangle or triangle.



4. Situational exercises

This category deals with movement activities in relevant subject specific situations and environments. In this chapter opportunities arise for activities which integrate the local environment, local nature and outdoor activities.

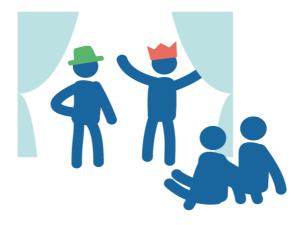
Here is an example where maths teaching takes place outside with students using mathematical terminology in action to measure different angles in the play-ground.



5. Creative/aesthetic learning activities

This category deals with movement activities which have a particular focus on creative, aesthetic and productive dimensions. Here academic content is integrated in a different and creative way in forms such as music, theatre and expressive activities.

An example of this is how theatre activities can be included in school-work on the Danish author Hans Christian Andersen's fairytales. The students could interpret and dramatize one of his most famous fairytales; The Ugly Duckling.



Finally, we hope that this article has given an insight into how movement is integrated into Danish schools. We hope that it gives you inspiration and new ideas about combining movement and learning within Taiwanese schools. Lastly, we look forward to future cooperation between Danish and Taiwanese schools and universities.

For further information, please feel very welcome to contact the main author of this article, Claus Løgstrup Ottesen by e-mail: cott@ucsyd.dk

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Textbox – facts about Denmark:



Education in Denmark:

- The Ministry of Education
- 20 Universities
- 7 University Colleges
- 139 Upper secondary schools
- 1868 Primary and lower secondary schools

Danish primary and secondary school:

- Children can start at the age of 5 year in the preschool class
- 9 year basic education in a wide range of subjects
- One of the school subjects is physical education, which is taught in all year groups
- 2-3 lessons of 45 minutes are taught
- A second school subject is health education. Lesson time is not allocated to this subject
 the subject should be seen as being a cross-curricular subject.

New school reform in Denmark:

- 45 minutes of movement every day
- A longer and more diverse school day with more and better education and learning
- Professional development of teachers, teaching assistants and principals
- Set clear goals and simplifications of rules
- Examination in physical education in 9th grade