

探討身體知覺與兒童學習的關係

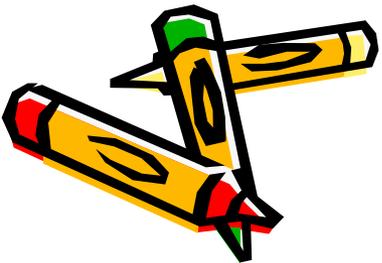
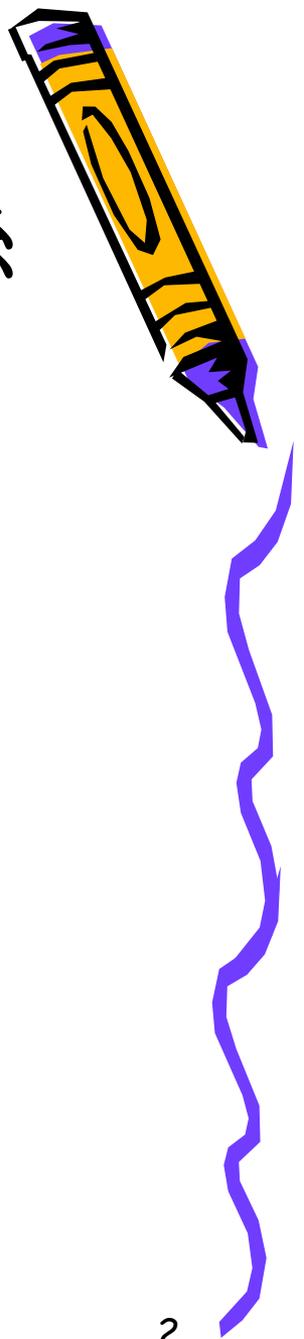
Dr. Yvonne Han 韓明怡博士



探討身體知覺與兒童學習的關係

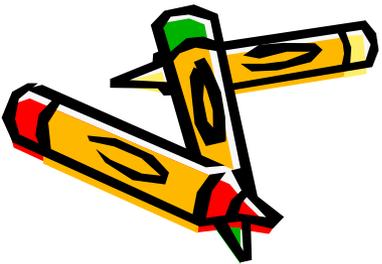
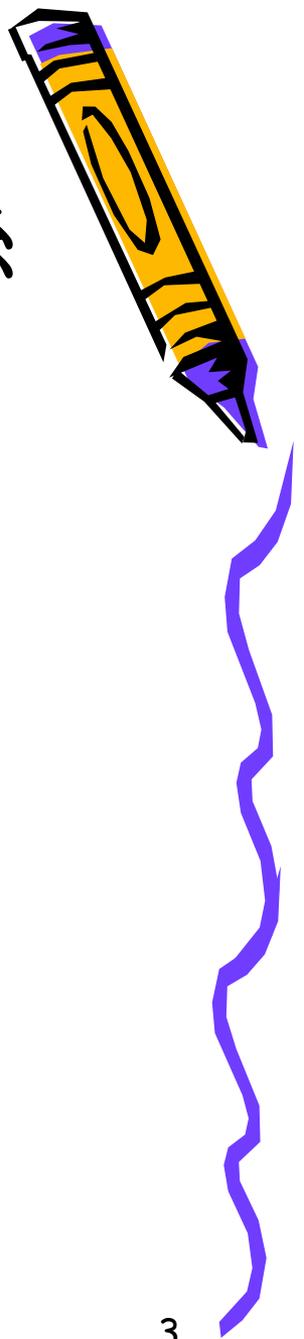
目的：

- 認識多元感官功能與兒童認知發展的關係
- 了解感覺統合障礙如何影響兒童的學習



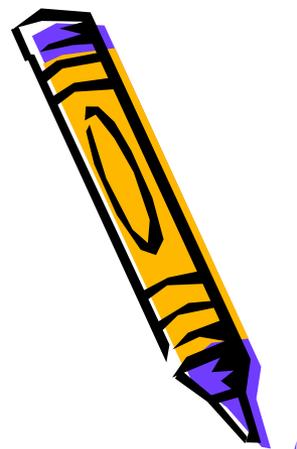
探討身體知覺與兒童學習的關係

- 何謂感覺統合
- 感覺統合與兒童發展的關係
- 感覺統合障礙與兒童學習



何謂感覺統合？

- 幼兒階段，兒童直接透過不同感覺，認識自己和周圍的環境。

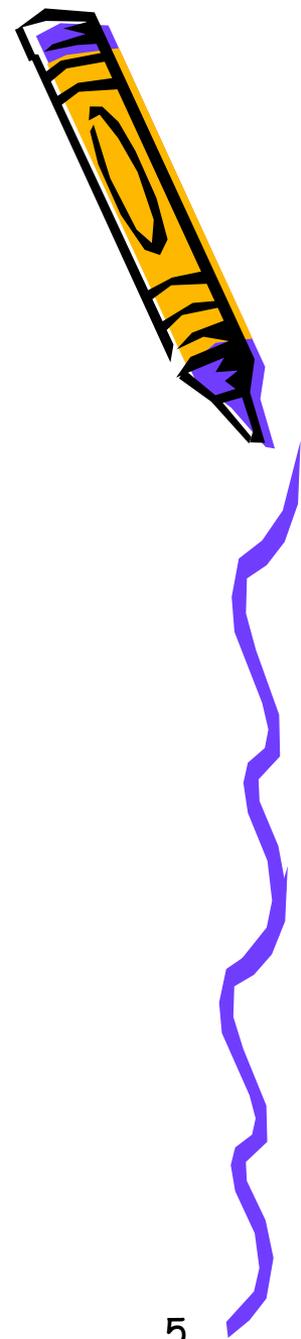


何謂感覺統合？

感覺：

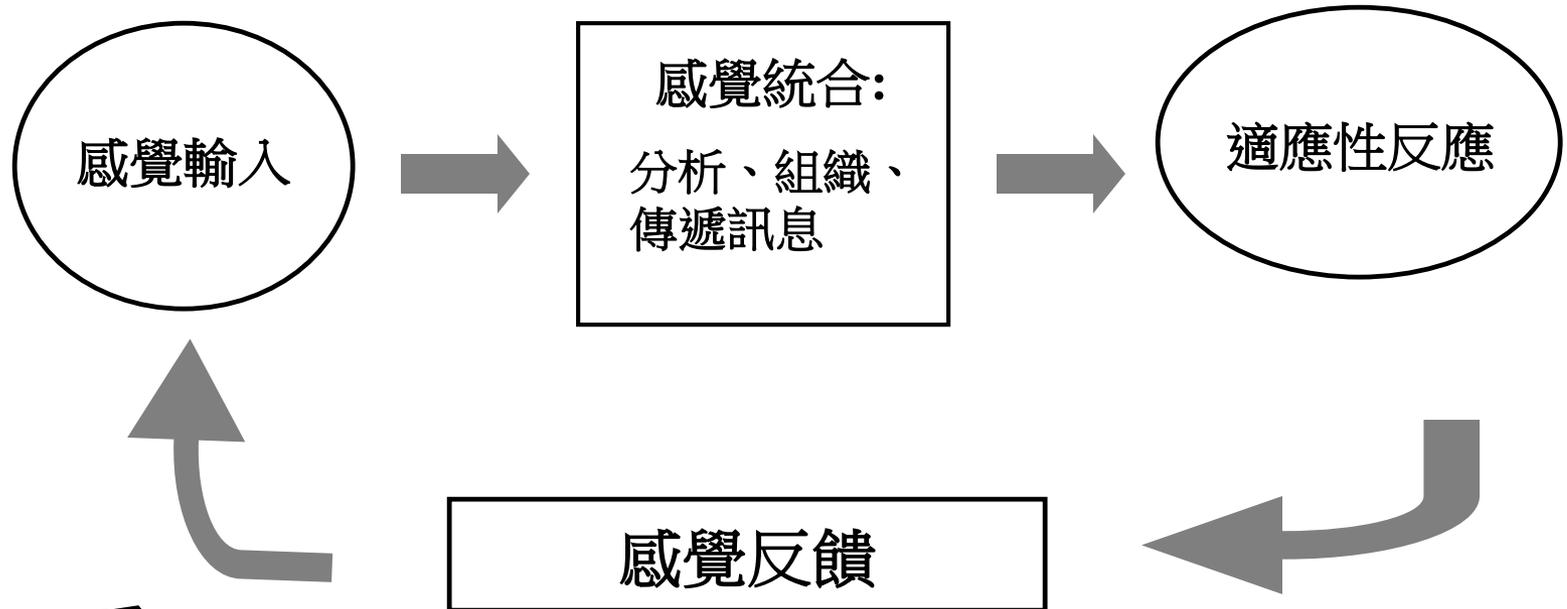
透過不同感覺器官接收的訊息，包括：

- 視覺
- 聽覺
- 味覺
- 嗅覺
- 觸覺
- 本體感覺
- 前庭平衡感覺

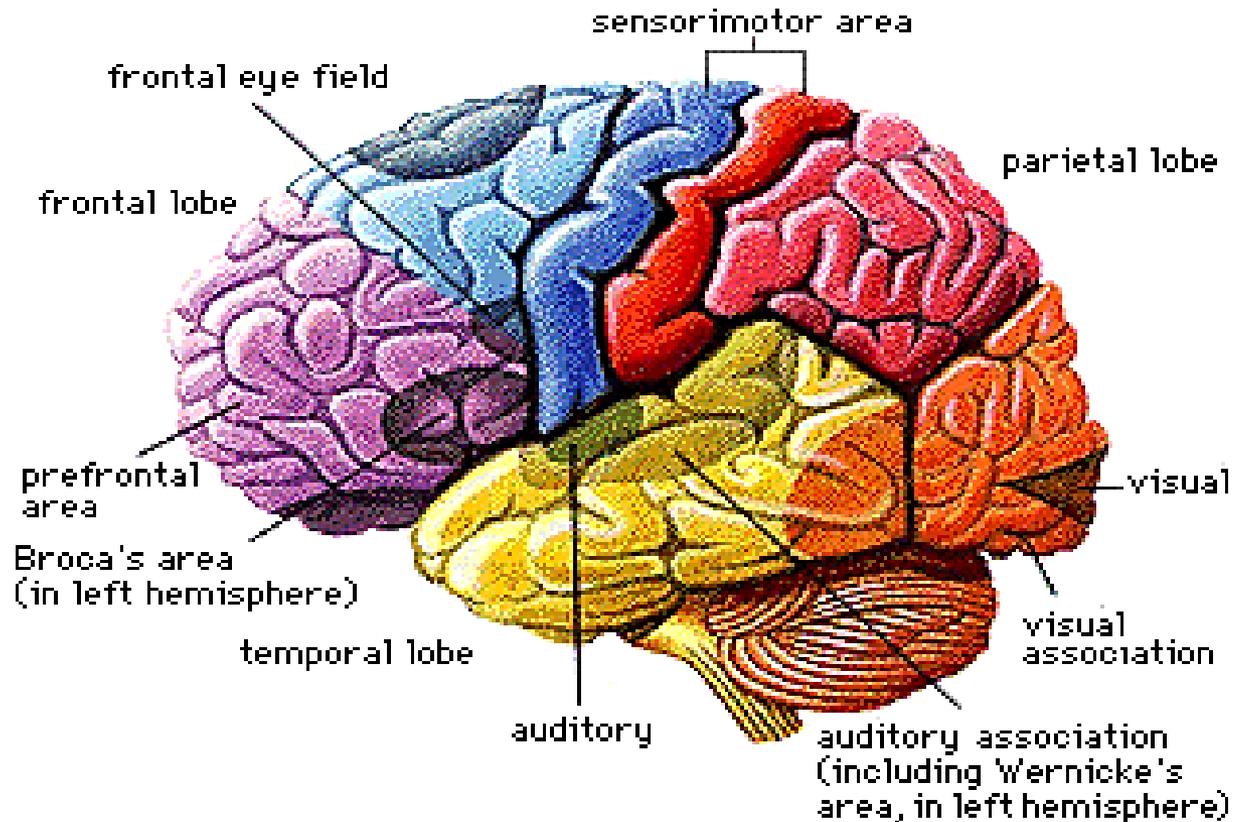


感覺統合

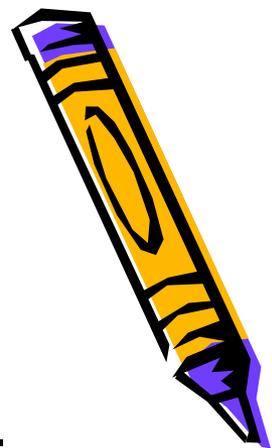
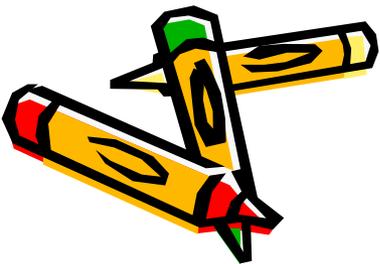
腦神經整合及處理各種感覺資料的過程：



感覺統合理論基楚



- Every child has an inner drive to develop sensory integration.
- Skills are acquired through building blocks.

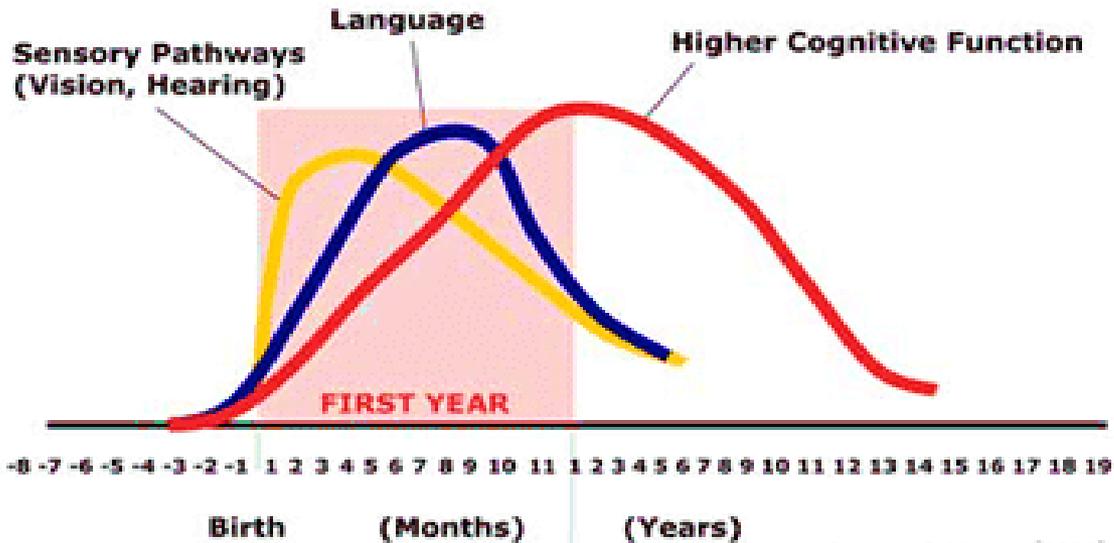


Human Brain Development

Synapse Formation Dependent on Early Experiences

(700 per second in the early years)

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Source: C. Nelson (2000) *

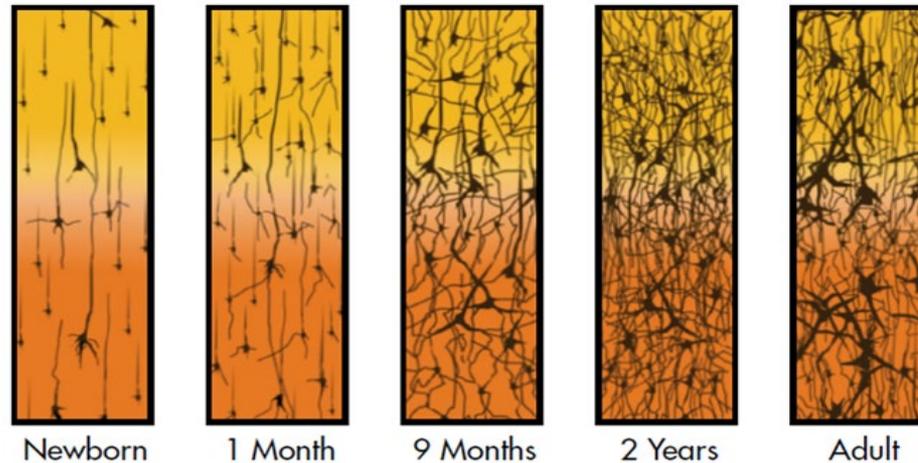
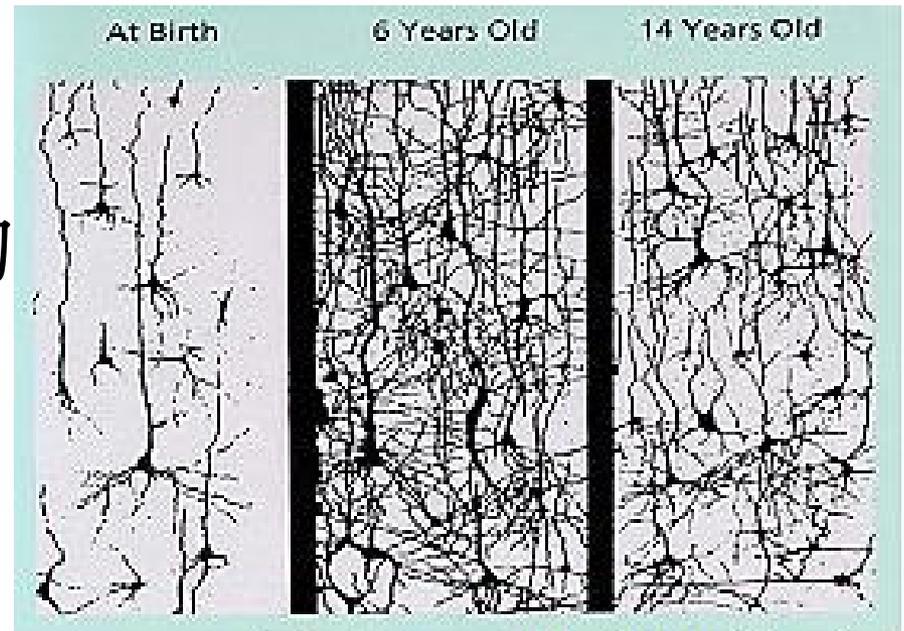


FIGURE 3:
Synapse Density
Over Time

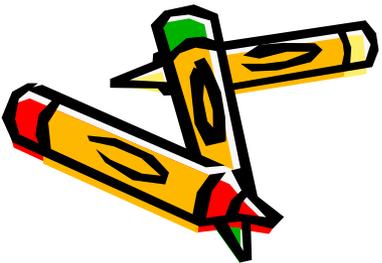
Source: Corel, J.L.
The postnatal
development of the
human cerebral cortex.
Cambridge, MA:
Harvard University
Press, 1975.

嬰幼期的感覺教育

- 嬰幼時期重要的是神經組織的建構
- 嬰兒出生後的前七個月，大腦接收訊息後，進行初步的對照、組織、瞭解，以及記憶的統合學習



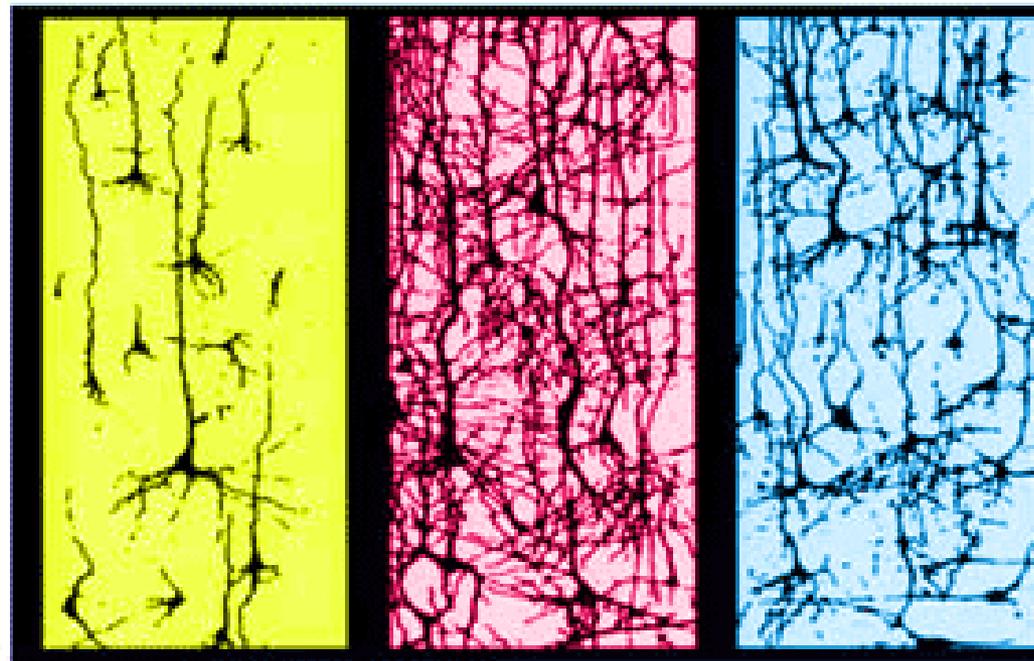
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- 大腦功能分化及神經體系是在這些感覺學習中，逐漸發展開來

Experience Shapes Brain Architecture by Over-Production Followed by Pruning

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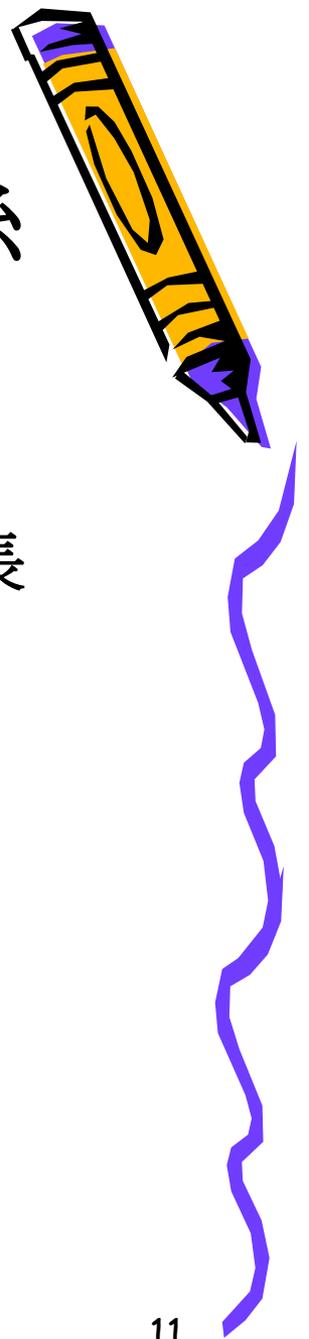
birth

6 years

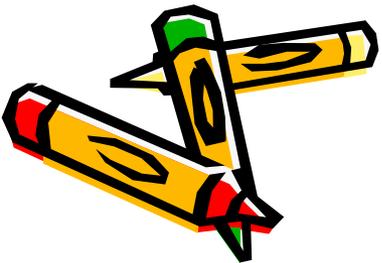
14 years

Source: Shonkoff, J. P. (2008) **

感覺統合與動作發展的關係

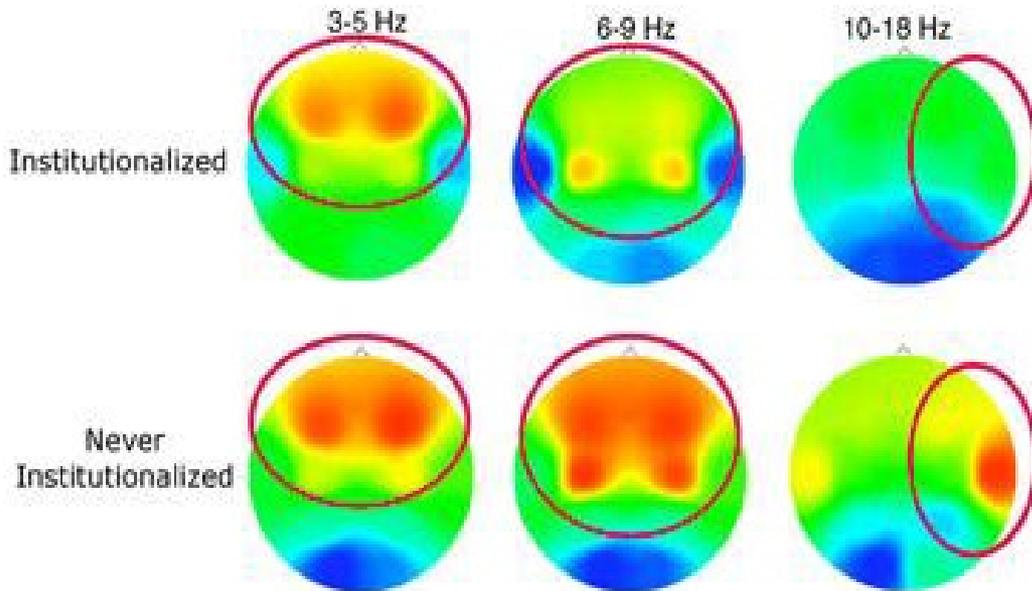


- 嬰幼時期是神經組織建構的關鍵期
- 不斷透過與外間的接觸、刺激 ⇒ 肌能反應及增長
- 給予發展空間及試驗機會
- 提供適當及多元化的刺激 → 引發適當的反應

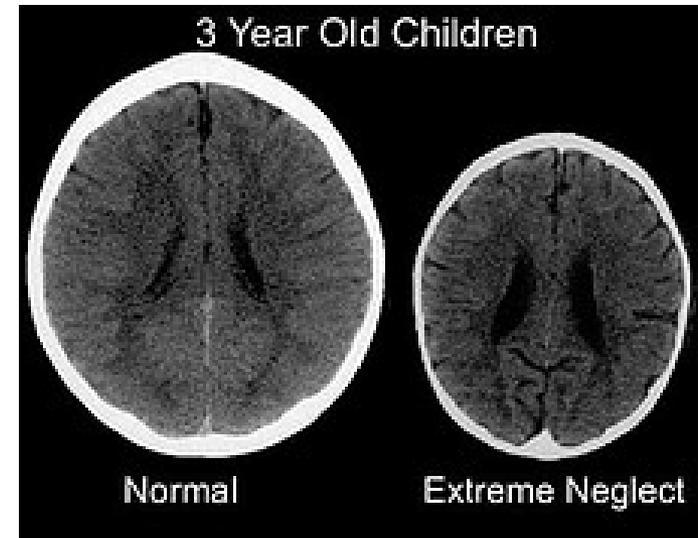


Extreme Neglect Diminishes Brain Power

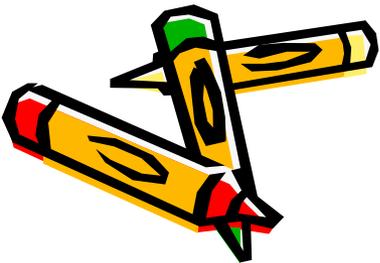
 NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

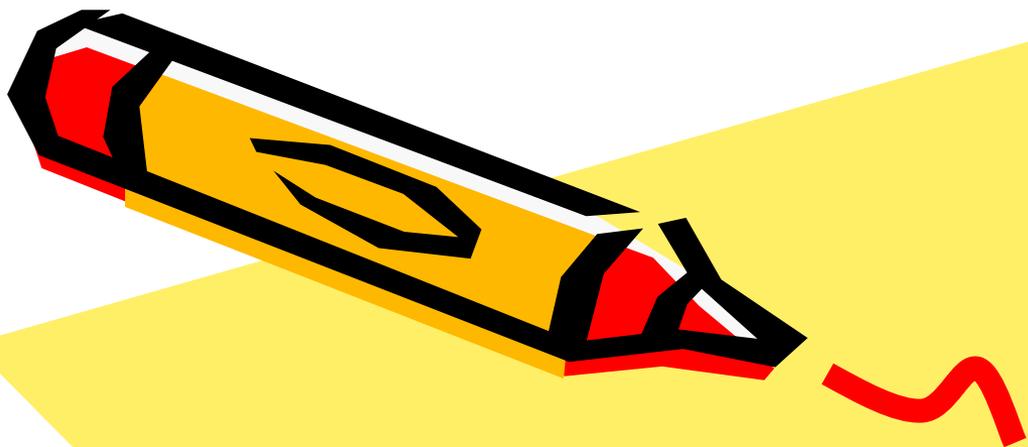


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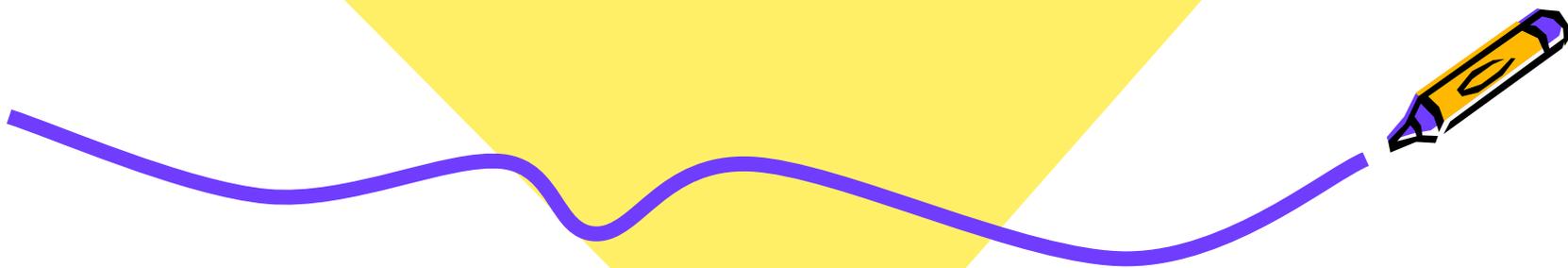


- The brain of the neglected child shows much less activity than that of a normal child.
- Early experiences have long term impacts on brain power.
- Creative play and quality care make all the difference for children.



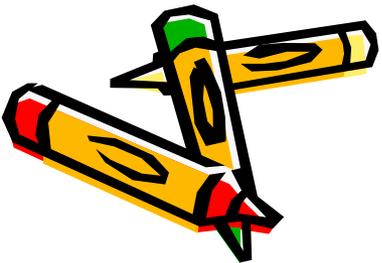
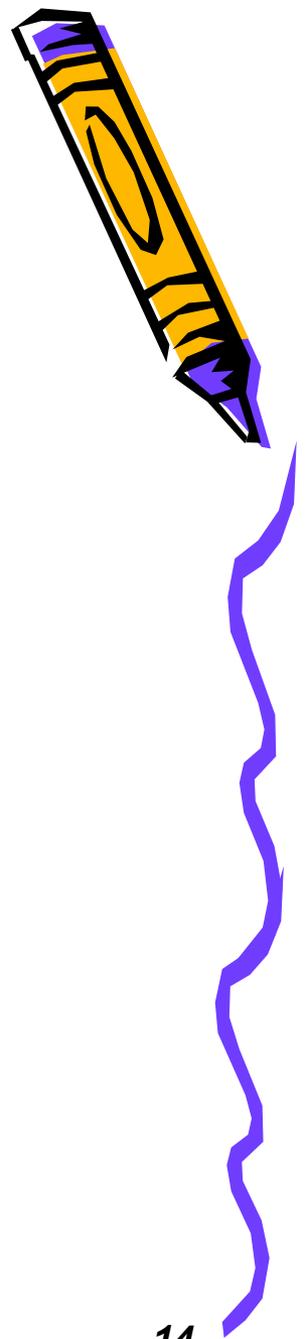


感覺的功能



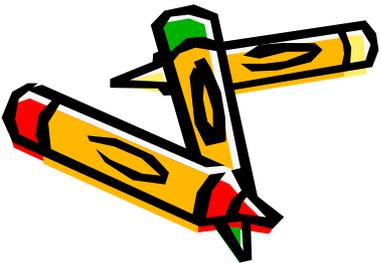
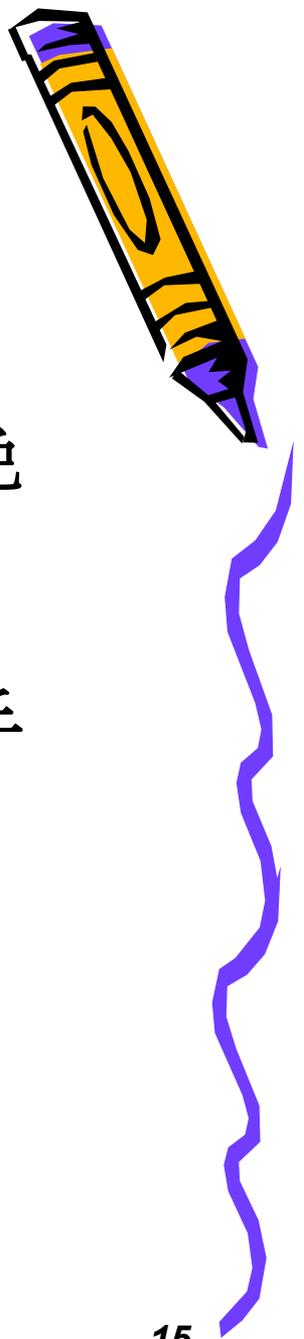
嗅覺

- 協助我們靈敏地認識環境及適應環境的變化
- 讓幼兒用感覺去學習，摸摸看、聞聞看，才會有真正的效果



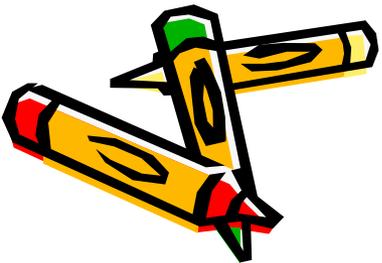
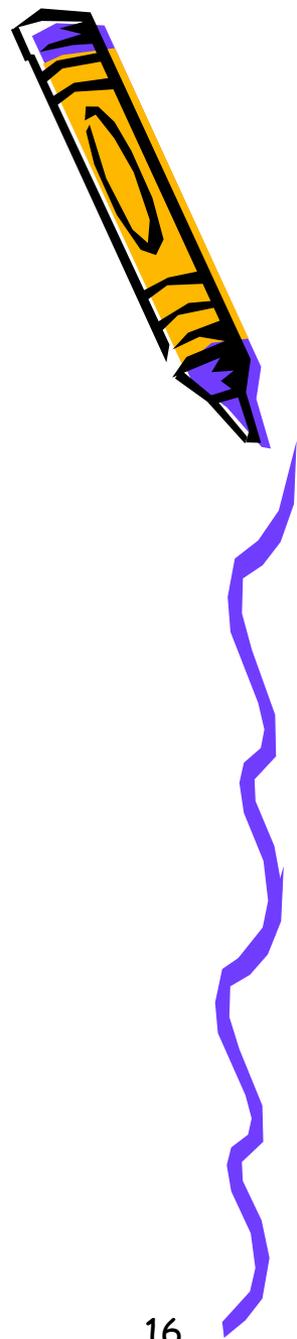
味覺

- 味覺訓練可以培養嬰幼兒的獨立性，避免挑食、偏食等壞習慣
- 讓幼兒自己進食，亦是訓練大小肌肉及手眼協調的方法



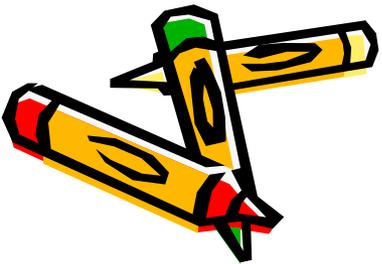
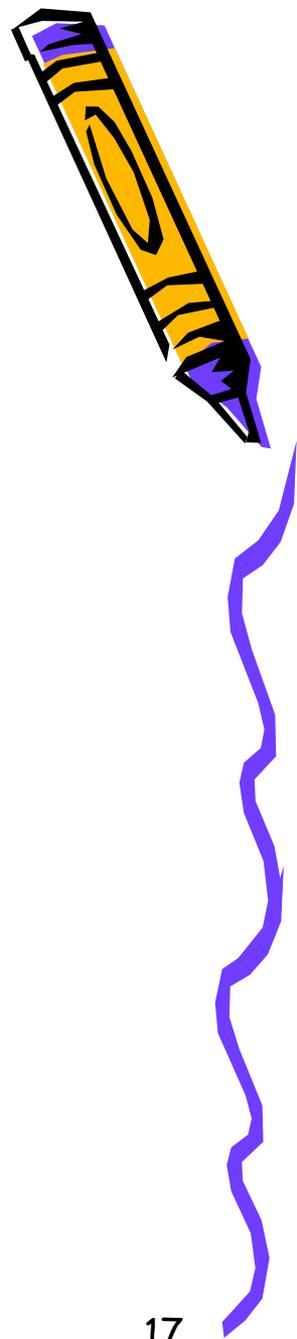
觸覺

- 保護性及識別性 - 觸摸、質地、冷熱、疼痛等
- 建立身體形象，有助視知覺的發展
- 建立安全感、穩定情緒



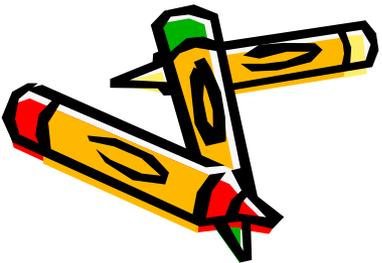
聽覺

- 聲音及環境關係的認知
- 聲音的敏銳度



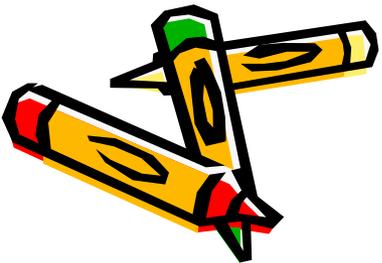
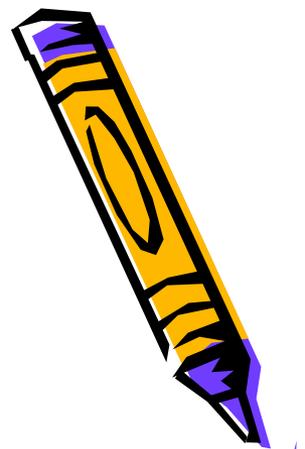
視覺

- 初生嬰兒，視覺有限，只能接受單純和強烈的光線及顏色
- 但視神經系統在快速成長，沒必要將感覺侷限
- 三歲前，視力發展尚未成熟，缺乏清晰度



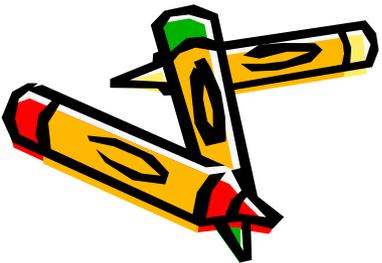
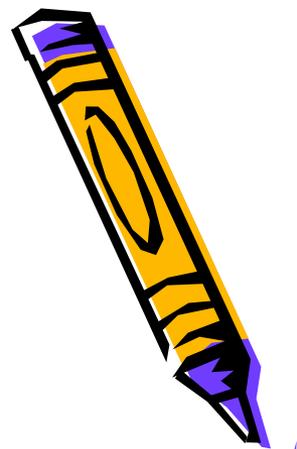
視覺

- 視力清晰度 = 焦距能力
- 焦距的穩定有賴視覺神經及視覺肌肉的成熟
- 焦距約在三至四歲才穩定
- 看的東西要較大、較簡單



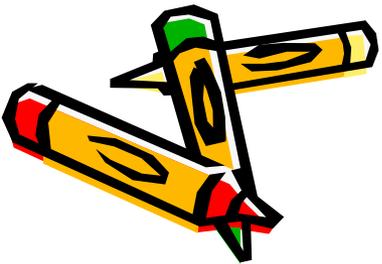
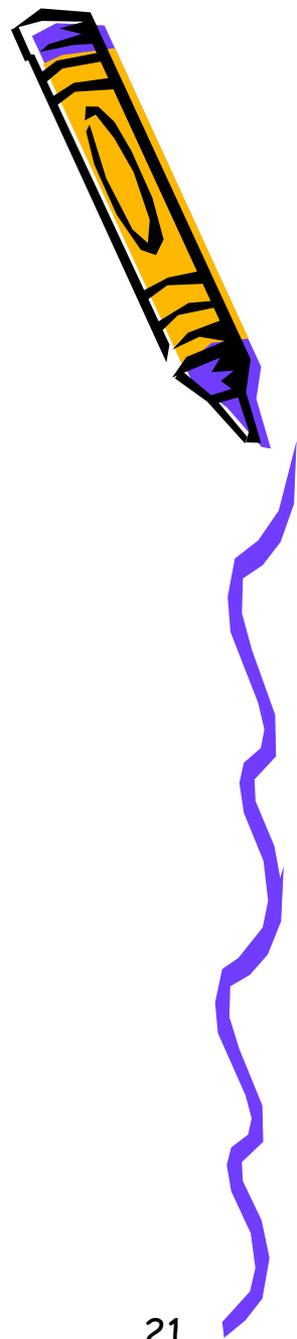
前庭平衡感覺系統

- 接收器於內耳
- 負責感受身體的速度感、及
- 地心吸力對身體的牽引 → 重力平衡感

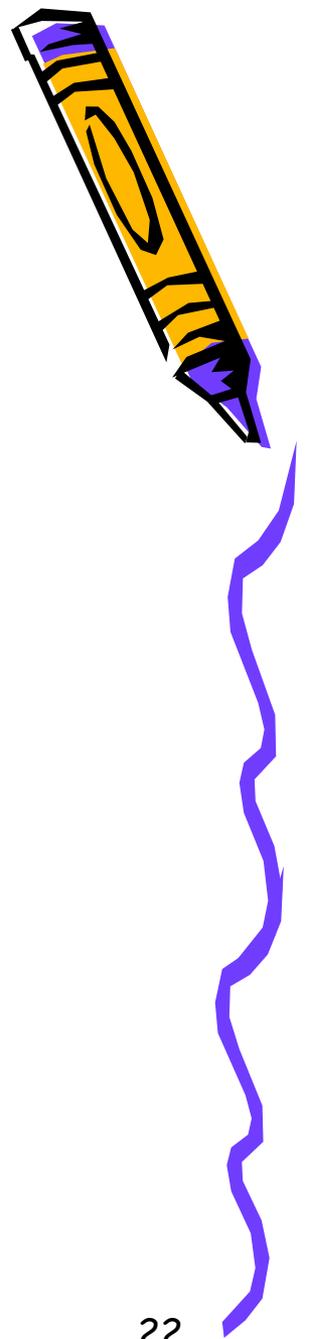


本體感覺系統

- 接收器散佈於肌肉、關節內
- 肌肉關節動覺
- 控制大小關節的活動

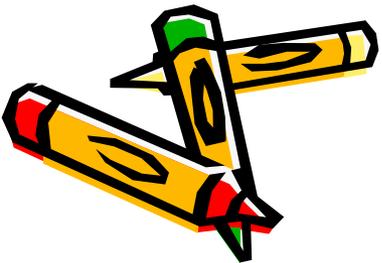


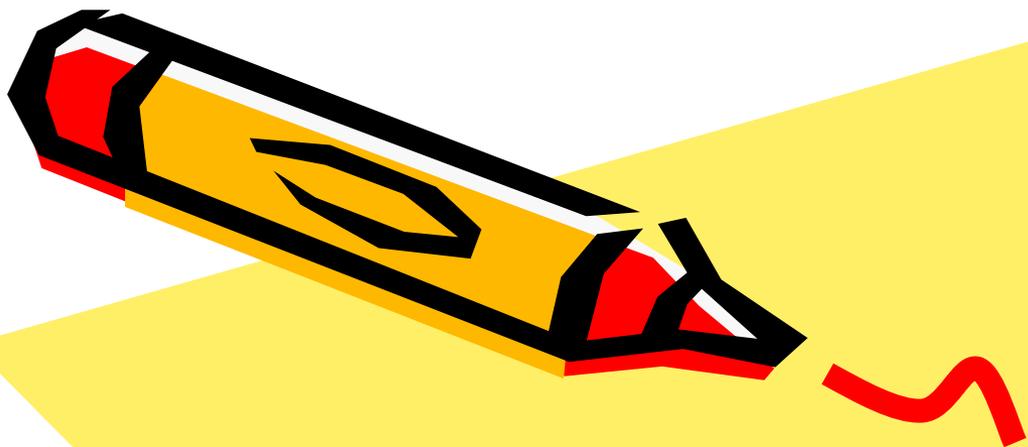
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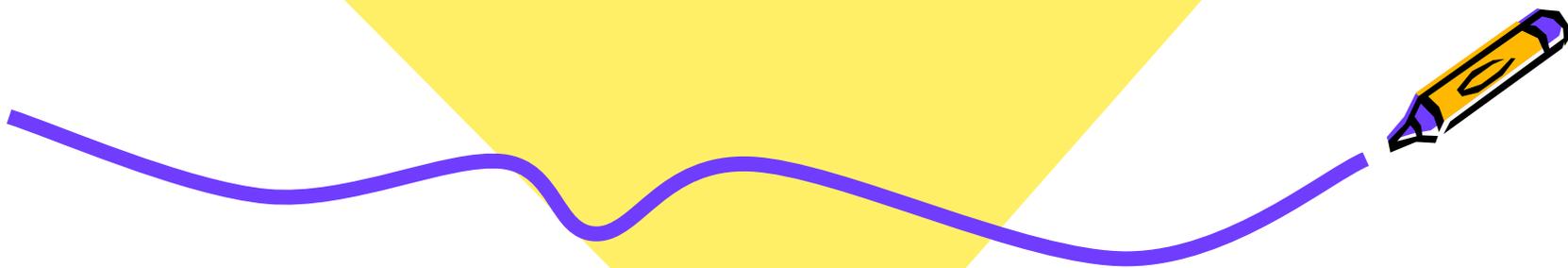
功能：

- 調節肌肉於活動時的力度及速度
- 調節姿勢、保持平衡
- 與大腦不斷地互動 → 操作各種工具
- 能抑制中樞神經系統作用、有助平靜情緒



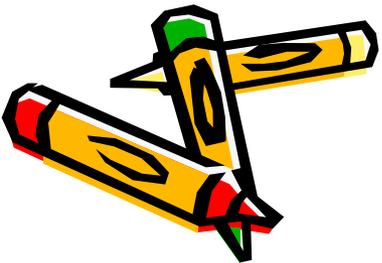
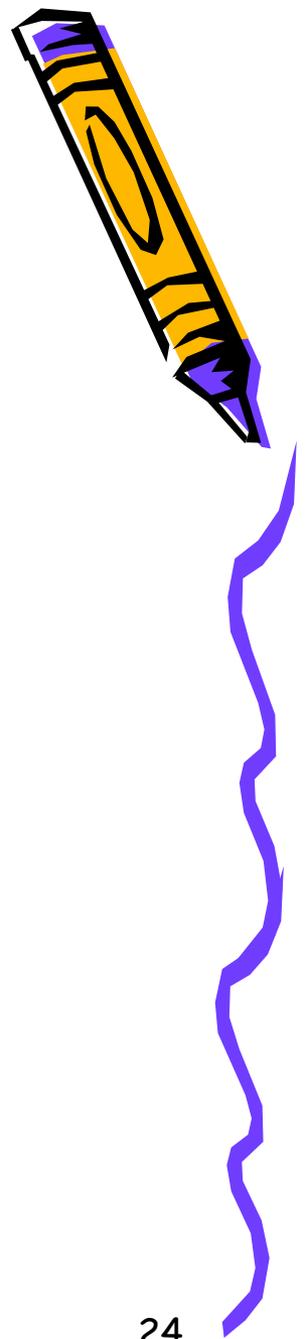


感覺功能障礙 (活動)



前庭平衡感覺系統

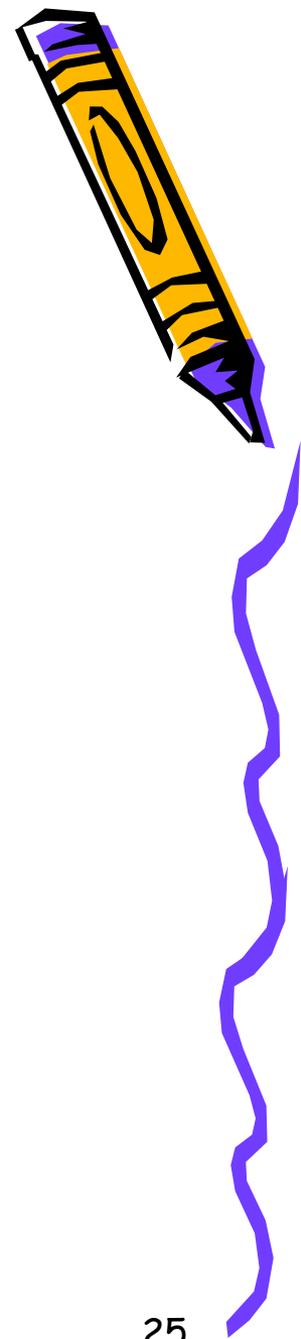
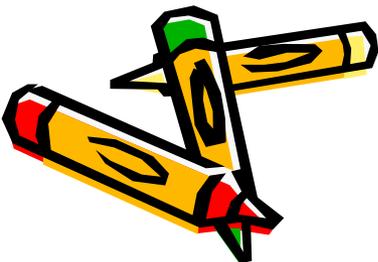
- 接收器於內耳
- 負責感受身體的速度感、及
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前庭平衡感失調

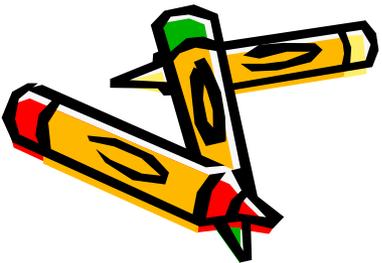
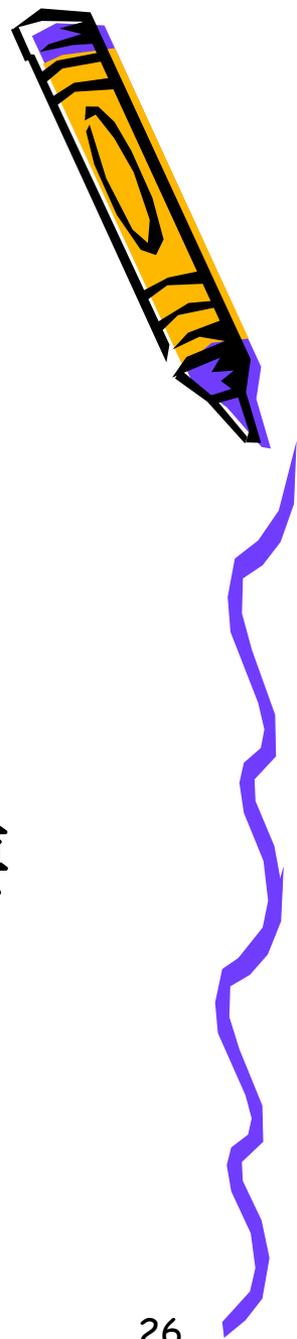
過敏：

- 怕搖盪、旋轉
- 怕雙腳離地
- 注視、追視能力弱
- 情緒緊張，易發脾氣



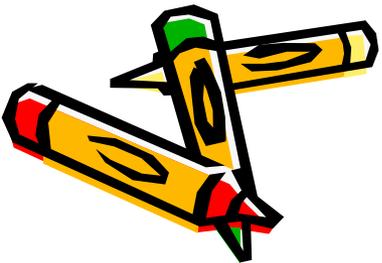
視覺

- 東張西望和爬行：
 - 促使頸部肌肉發展成熟
 - 有助視、聽、肌肉穩定發展
 - 爬行階段是發展平衡感及視覺空間最重要的時期



視覺失調

- 東張西望和爬行：
 - 如頸部肌肉發展不成熟，會影響視覺肌肉及神經的發展
 - 造成幼兒焦距不穩定，看書時容易跳字、跳行、眼睛容易疲倦、手眼協調及小肌肉的使用也顯得不靈活

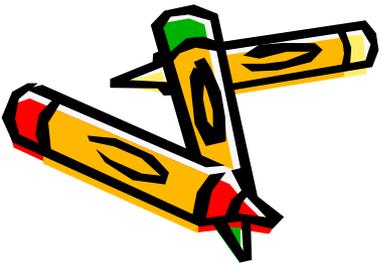
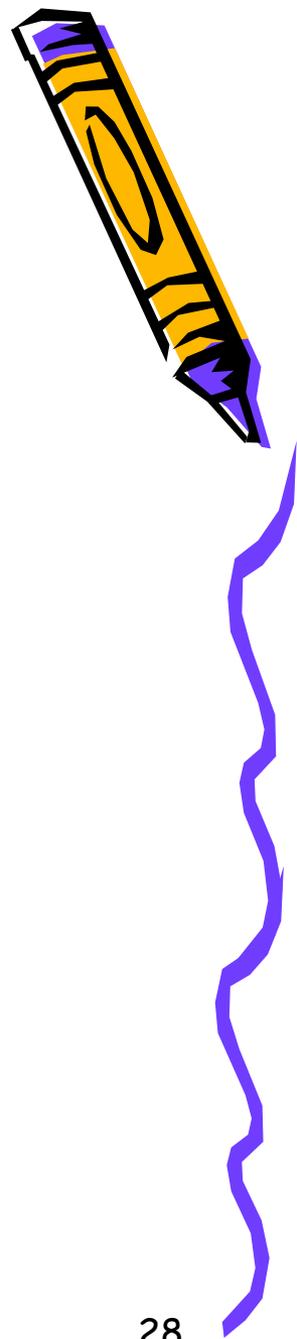


<https://www.youtube.com/watch?v=KIUII6Hz7cM>



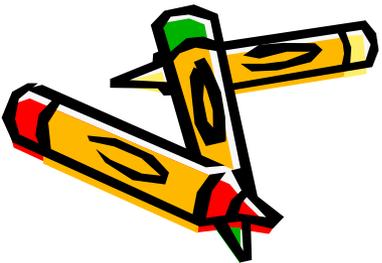
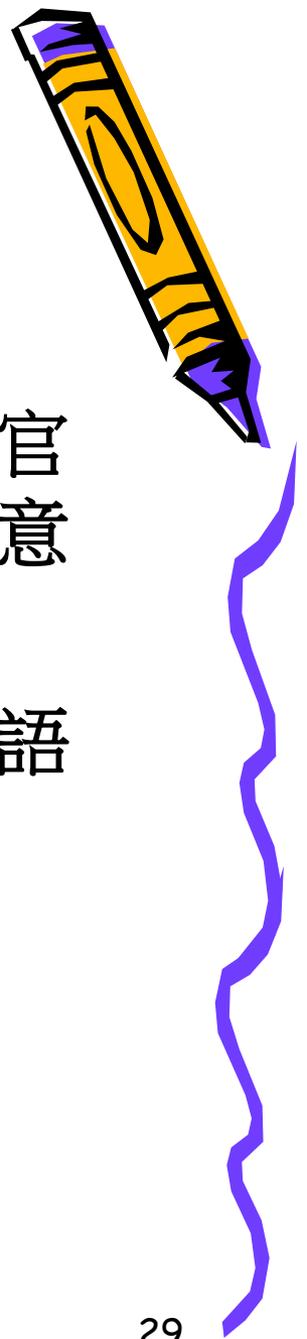
前庭平衡感失調

- 平衡能力偏弱
- 對方位、距離辨識力欠佳
- 動作協調弱
- 大肌肉發展遲緩



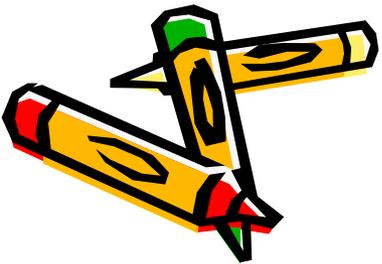
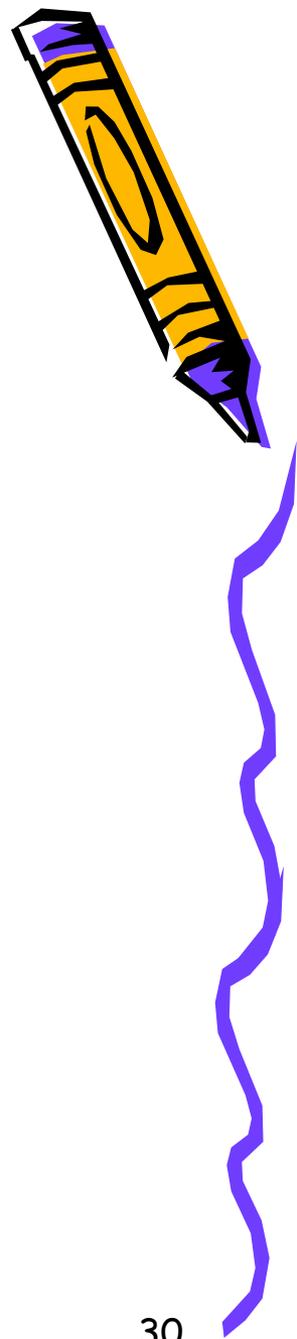
前庭平衡感失調

- 平衡感不良不但使大小肌肉和其他身體感官互動不佳，造成笨手笨腳、好動不安、注意力不集中的問題
- 更會影響動作企劃、左右腦均衡發展、及語言能力的進度



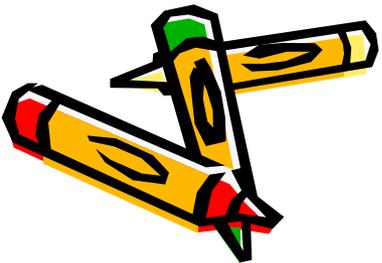
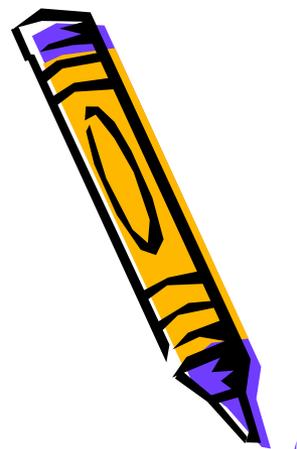
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- 聲音的敏銳度



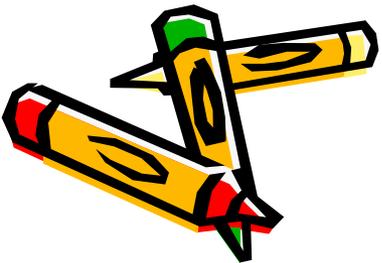
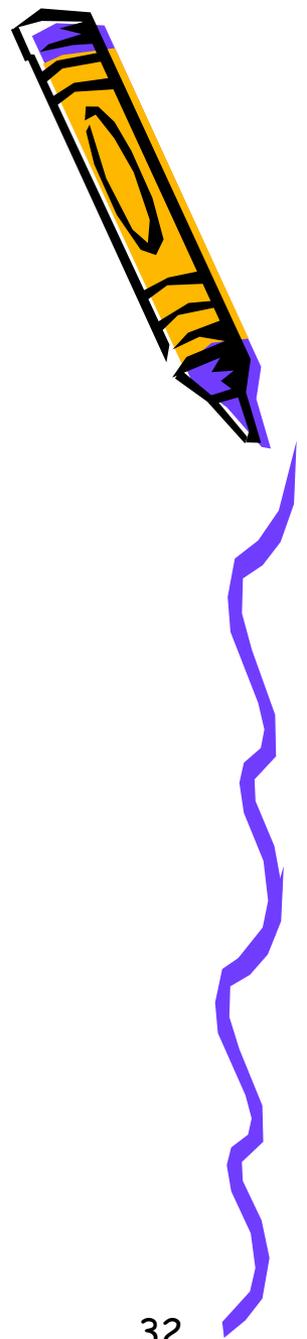
聽覺失調

- 易分心、喜歡掩耳、怕嘈
- 注意力弱、情緒不安
- 反應慢
- 學習不理想
- 自信心不足



本體感覺系統

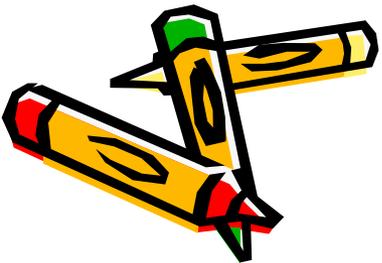
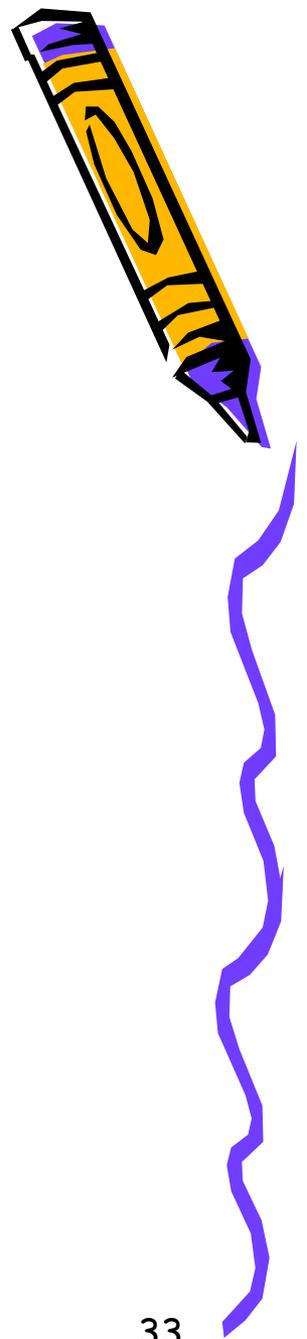
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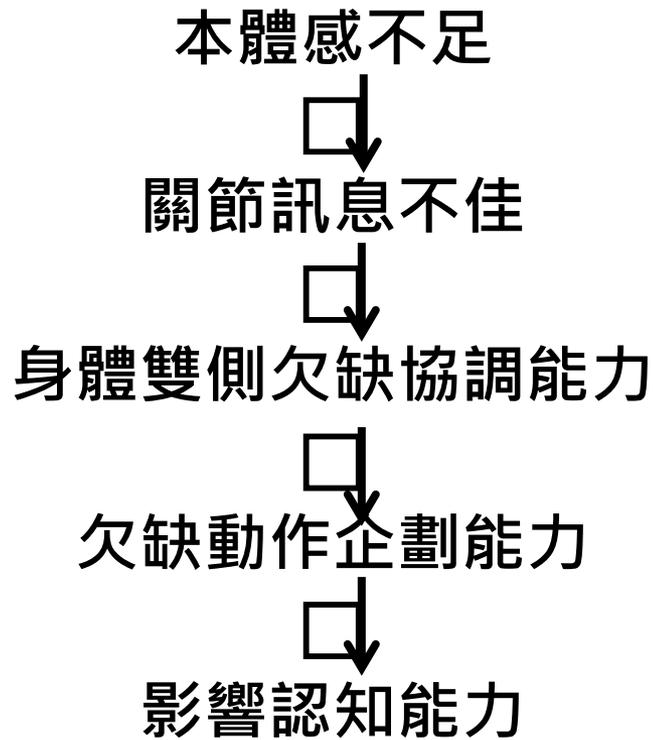
本體感覺系統

功能：

- 調節肌肉於活動時的力度及速度
- 調節姿勢、保持平衡
- 與大腦不斷地互動 → 操作各種工具
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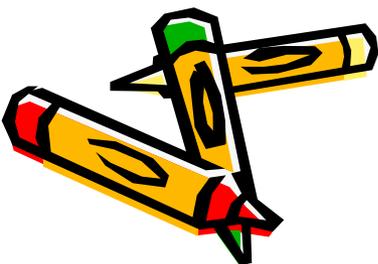
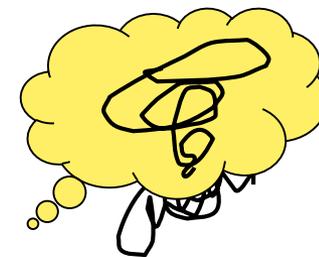


本體感失調



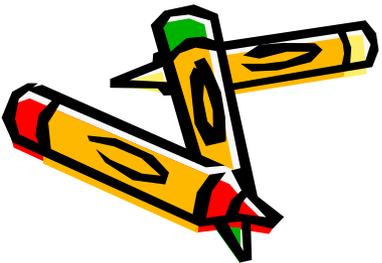
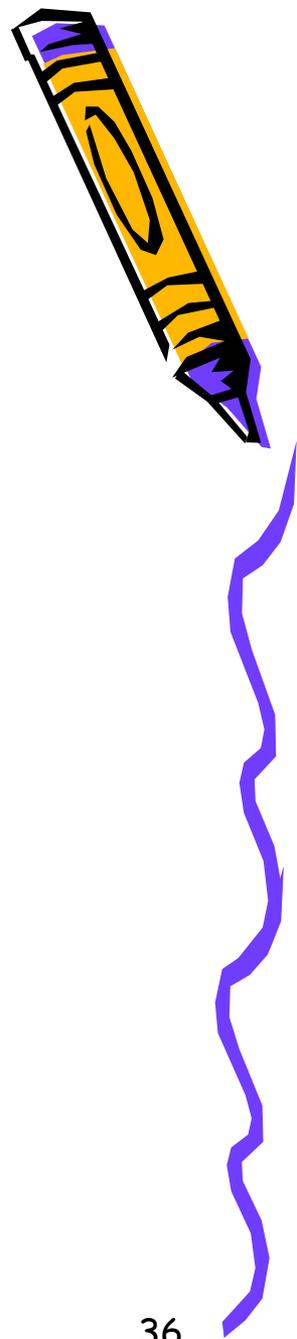
本體感失調

- 調校力度能力弱
- 生活自理技巧運用欠靈活
- 學習運用文具技巧有困難
- 容易碰撞傢俬雜物



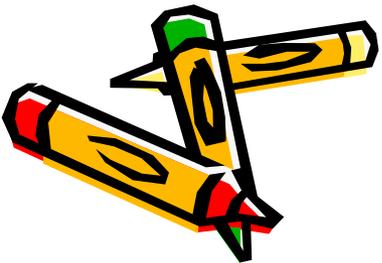
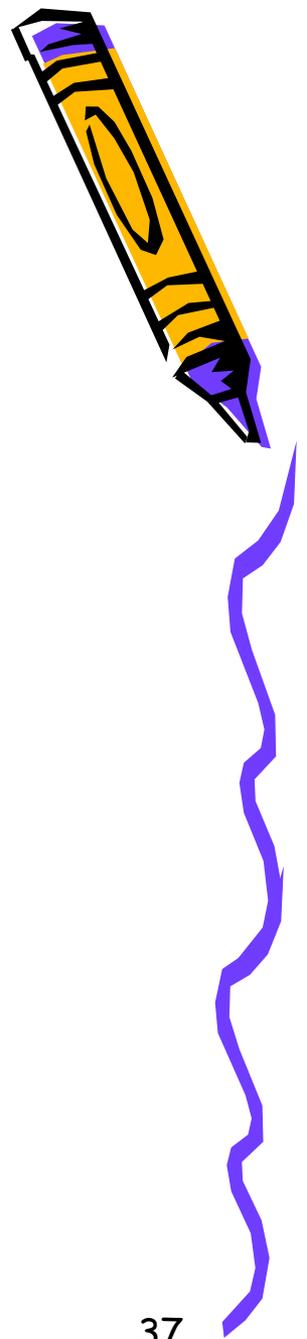
觸覺

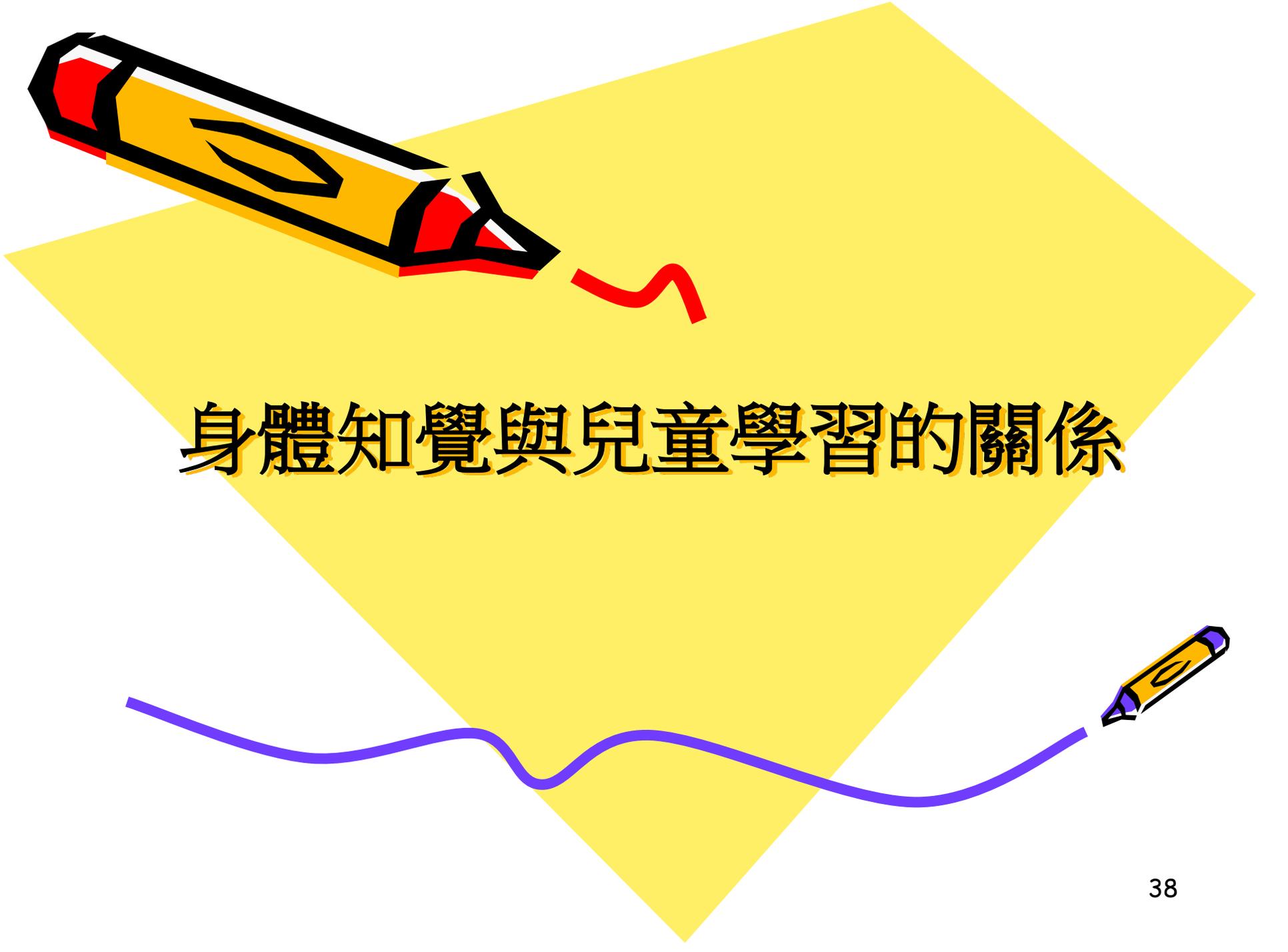
- 保護性及識別性 - 觸摸、質地、冷熱、疼痛等
- 建立身體形象，有助視知覺的發展
- 建立安全感、穩定情緒



觸覺失調

- 令大腦分辨能力不足
- 對外界刺激不是太遲鈍，就是太敏感，造成幼兒適應環境的困難
- 偏食、逃避咀嚼、對衣物挑剔
- 缺乏安全感、情緒不穩

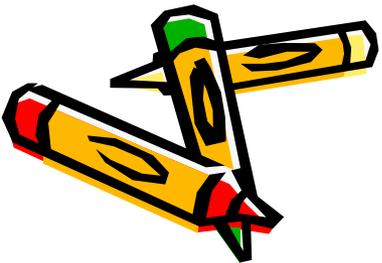
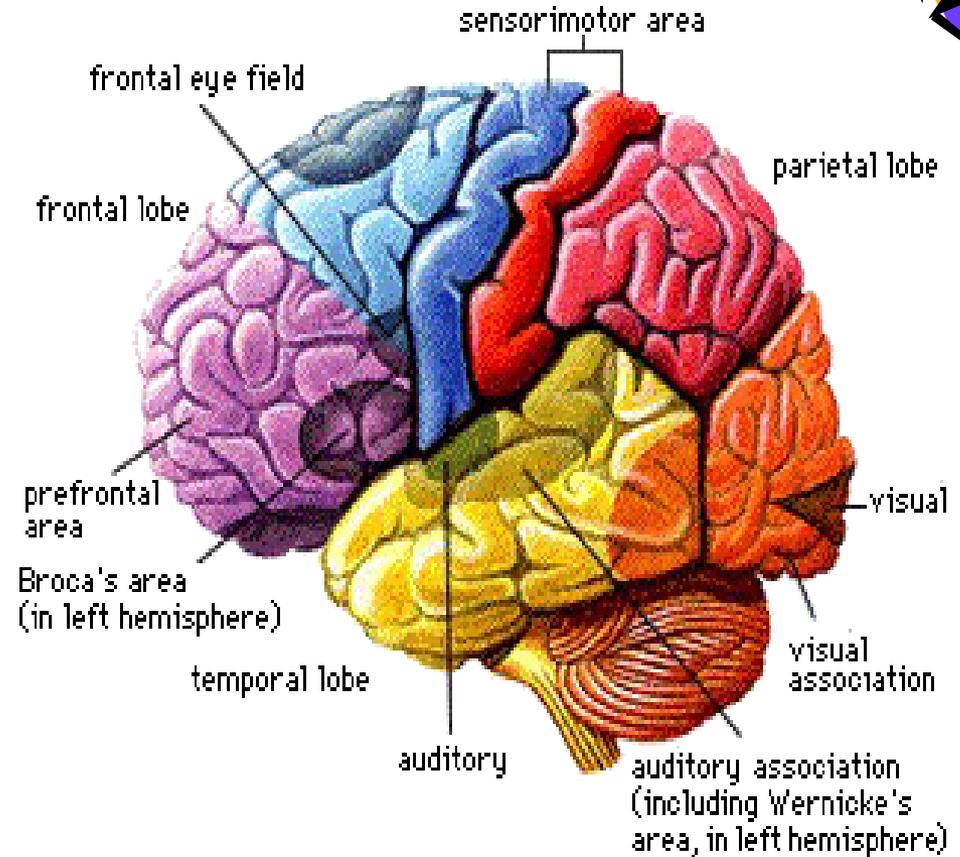




身體知覺與兒童學習的關係

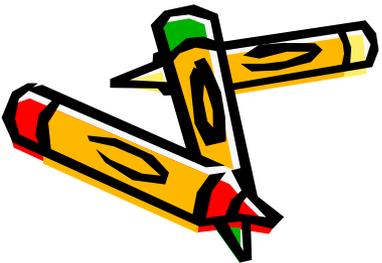
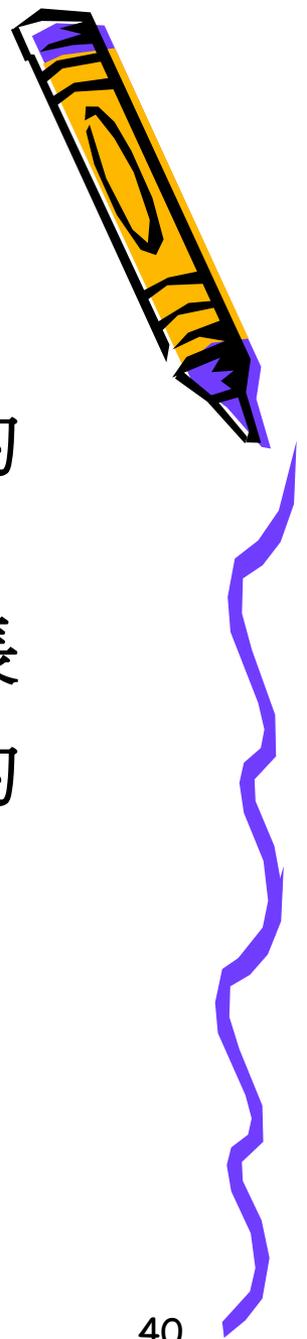
動作發展的過程

- 幼兒七至十八個月期間，大腦的運動企劃區 (**motor Plan**) 漸成熟
- 感覺和感覺運動逐漸發展出知覺運 (**motor play**) 的能力
- 自發性學習大幅增加



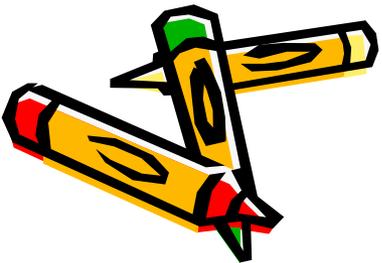
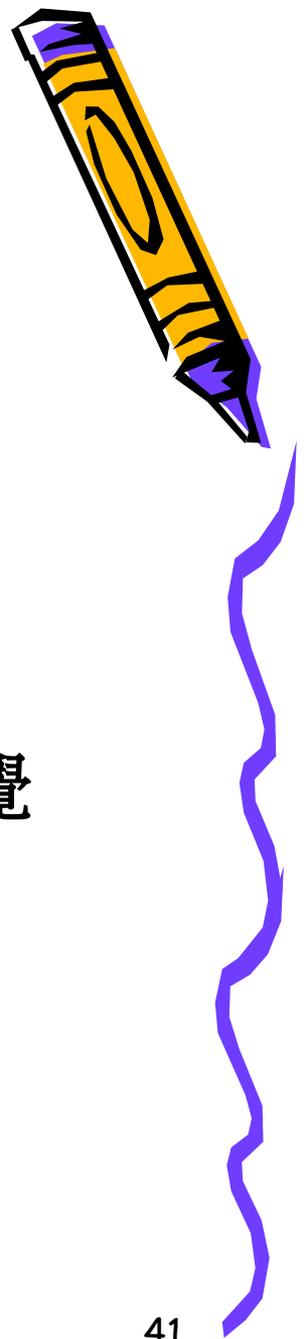
動作發展的過程

- 此期間，幼兒頸後方的前庭神經核的功能逐漸成熟
- 前庭覺在前庭平衡的促動下快速成長
- 本體感也在觸覺、大小肌肉及關節的協調下發展更成熟
- 幼兒身體運作也更為靈活



動作企劃

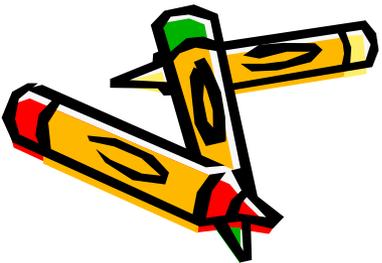
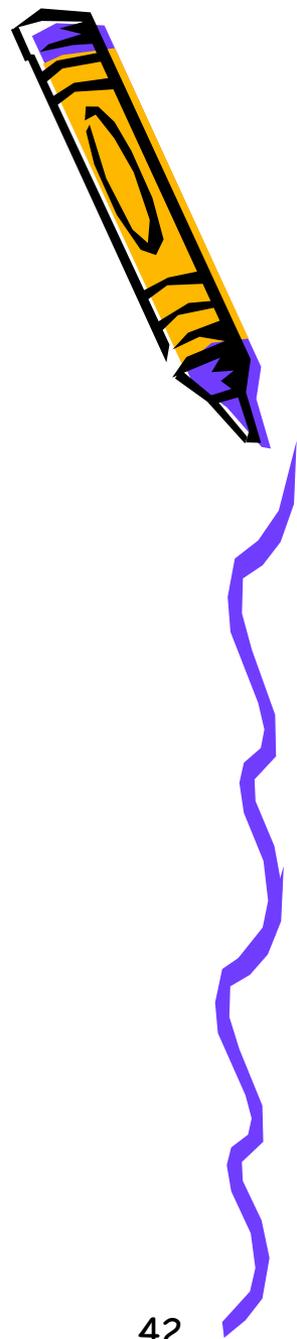
- 進行一件工作時，先觀察自己與環境間的關係，再依照需要逐步完成。
- 動作企劃會影響幼兒對環境的認知，使自己和環境得以進行更積極的協調 - 知覺運動。



動作企劃主導學習能力

感覺學習發展的過程：

- 建立感覺通路
- 發展感覺動作
- 認識身體形象
- 形成知覺運動
- 發展認知學習

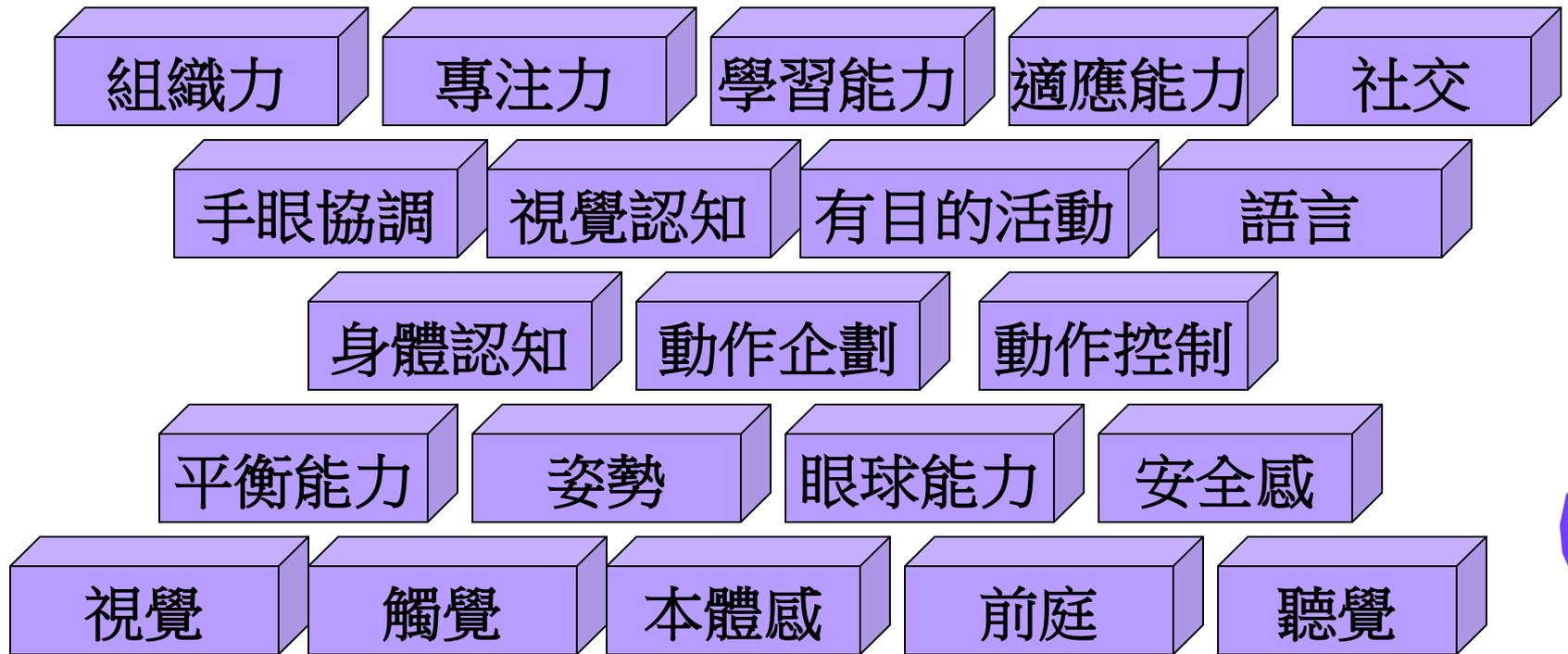


動作企劃主導學習能力

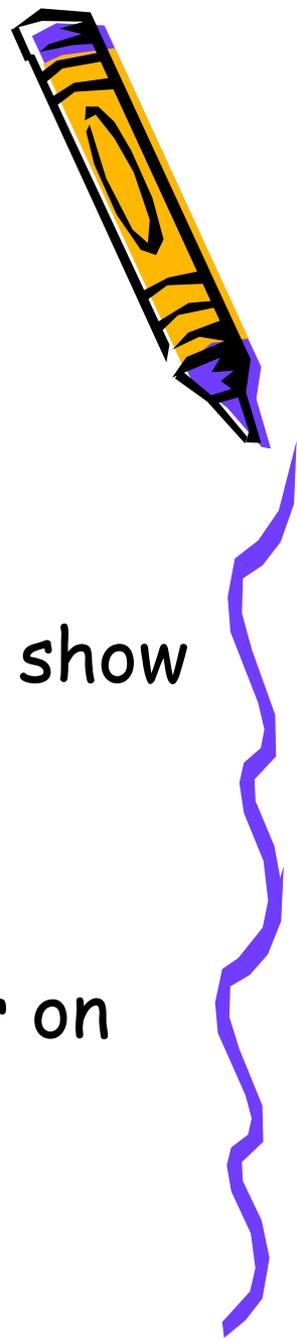
- 感覺學習發展的過程，有賴於大肌肉的健全成長，所以平衡感的好壞扮演著決定性的影響。直接干擾運動企劃及語言能力的健全發展
- 經由觸覺及大小肌肉、關節運動，幼兒逐漸能掌握身體的靈活度
- 本體感和動作企劃能力，使幼兒對環境有足夠的認知，進而影響語言表達及人際關係的成長



感覺統合與兒童發展的關係

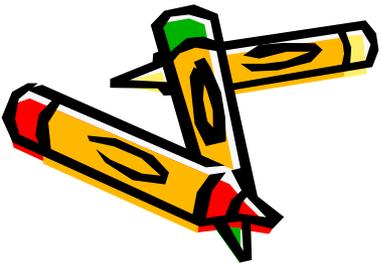


Sensory Integration - foundation for play & learning



McEwan et al (1991)

- Children between 2y9m to 5y8m.
- Children with early crawling experience show higher visual-spatial abilities and upper extremity motor planning skills.
- Non-crawlers scored significantly lower on imitation-of-posture.

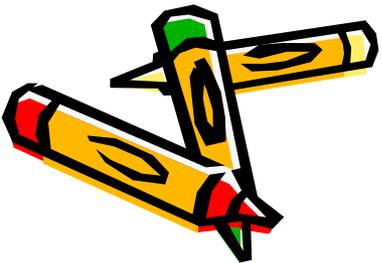


Sensory Integration - foundation for play & learning

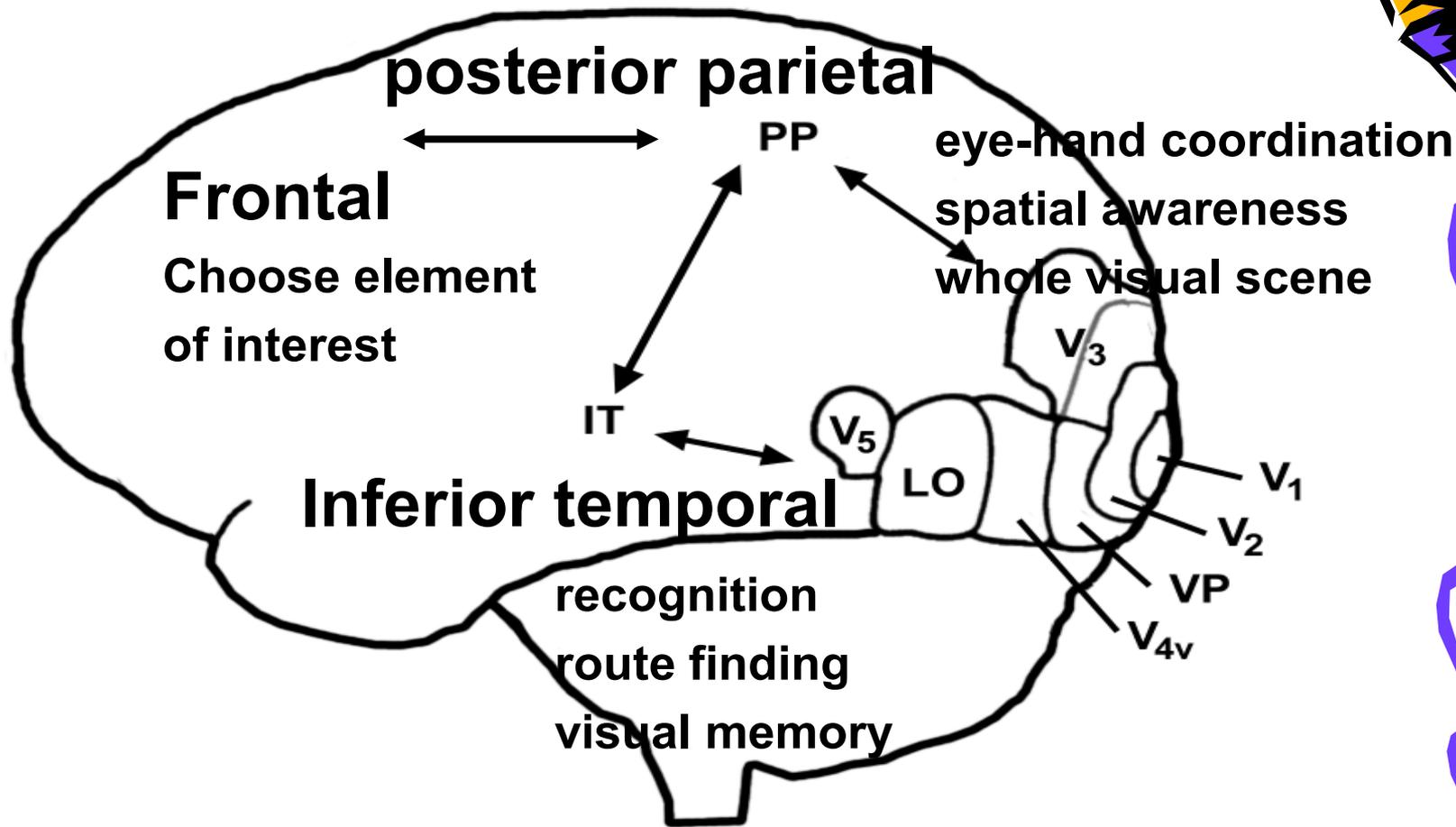


Pretorius, Naude & Van Vuuren (2002)

- Prolonged Pepa (carrying the baby on Mother's back) in South Africa → prevents crawling → negative effects on the development of visual integration pathways.



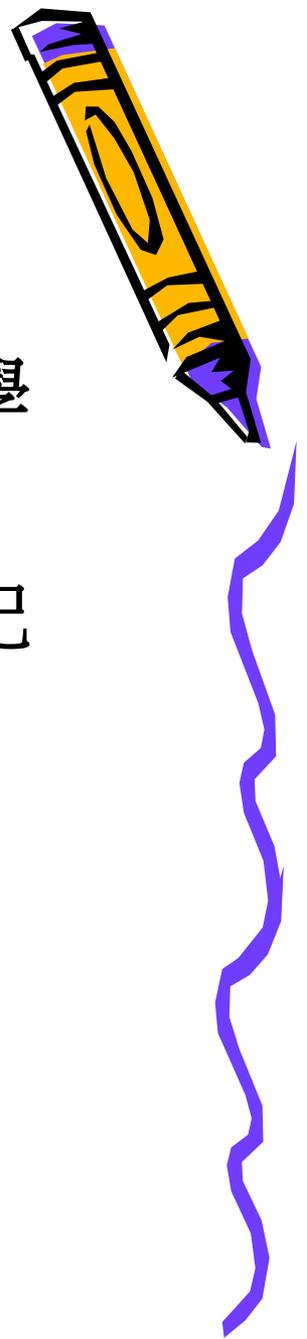
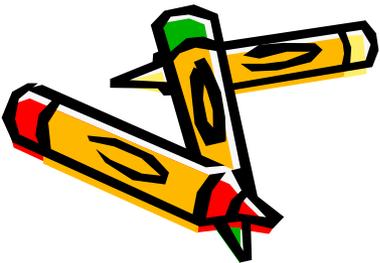
視覺神經系統



發展性協調障礙 (DCD)

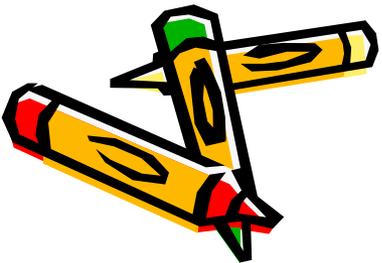
- 動作不靈活，計劃及組織活動困難，影響學習及日常生活。
- 平衡、協調、視覺感知、本體感覺、短期記憶、專注、情緒控制等不同程度困難。

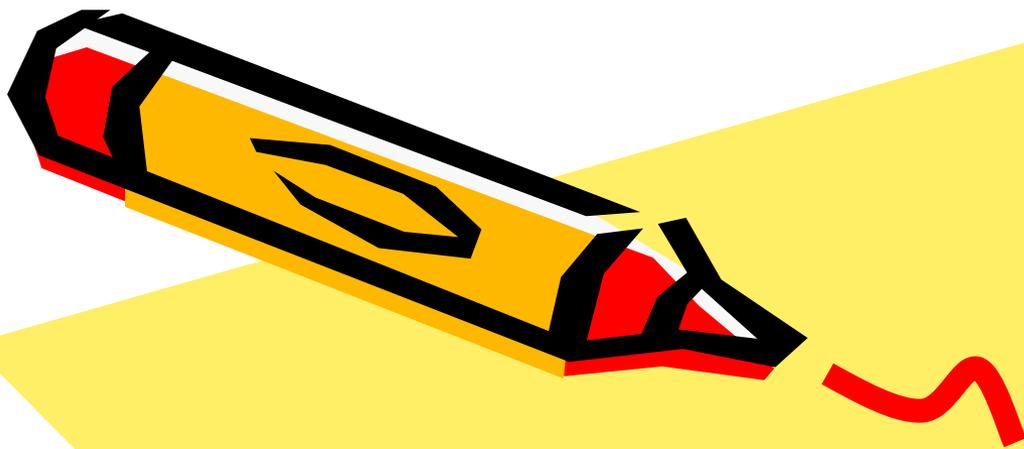
<http://www.youtube.com/watch?v=ncnVYonMA5Y>



「發展性協調障礙」的普遍性

- 外國的研究數字顯示 5-8% 的學齡兒童受影響
- 4 : 1 (男 : 女比例)
- 部份兒童同時患有過度活躍症及讀寫障礙





答問時間
Thank You!

