

1hr seminar (lecture 2 part A)

Lecture 2

Individual differences and achievement

Educational Psychology

Individual Differences Within a Classroom

THINK!!!

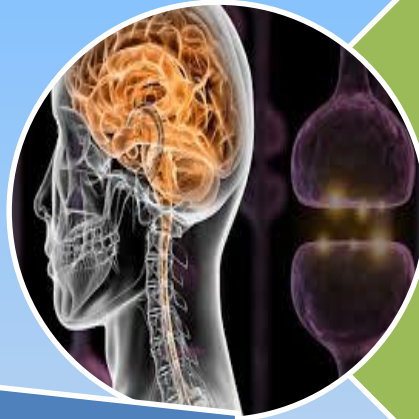
How much should a teacher consider students' individual differences in their classroom.

Should students be treated differently based on those differences.

What type of individual differences exist in the classroom?

Individual Differences : Cognitive ability and academic performance

Cognitive ability is the strongest predictor of academic performance (Jensen, 1998).



Walberg (1984) - meta-analysis of over 3,000 studies = correlation between cognitive ability and academic performance - about .70.

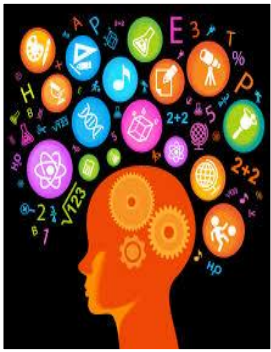
- Similar findings in Gagne & St Pere (2002) .

Boekaerts (1995) - correlations tend to decline as students progress in the educational system, dropping from about $r=.7$ in elementary school to as little as $r=.4$ in college

Rindermann and Neubauer (2004) found a correlation of .63 between COG-g and an ACH-g consisting of school grades.

Among secondary school students, cognitive ability correlates with academic performance in the order of .50 (e.g. [Sternberg et al., 2001](#))

Individual Differences : Cognitive ability and academic performance



Average IQ of a nation is highly correlated with the academic achievement of that nation (Lynn & Meisenberg, 2010; Rindermann, 2007)



Differences in IQ across 86 countries, Lynn and Meisenberg (2010) found a correlation of .92 in math, science and reading comprehension.

Intelligence

What does it mean to be intelligent?

If you were below average on a memory or personality test –
would this upset you?

If you were below average on an
intelligence test – would this upset you?

Intelligence



“the capacity to acquire and apply knowledge.”

Intelligence includes the ability to benefit from past experience, act purposefully, solve problems, and adapt to new situations.

Intelligence can also be defined as “the ability that intelligence tests measure.”

General
Intelligence Factor
- G - Charles
Spearman

Multiple
Intelligence -
Howard Gardner

Triarchic Theory
of Intelligence -
Robert Sternberg

- Which underlies all intelligent behaviour

- Linguistic: spoken and written language skills
- Logical–Mathematical: number skills
- Musical: performance or composition skills
- Spatial: ability to evaluate and analyze the visual world
- Bodily-Kinesthetic: dance or athletic abilities
- Interpersonal: skill in understanding and relating to others
- Intrapersonal: skill in understanding the self
- Nature: skill in understanding the natural world

- Componential Intelligence: the ability assessed by intelligence tests
- Experiential Intelligence: the ability to adapt to new situations and produce new ideas
- Contextual Intelligence: the ability to function effectively in daily situations

Intelligence

Intelligence

Standardised IQ tests (Stanford-Binet tests)

Normal distribution – average 100 points

Most falling within one standard deviation either side (85-115) (Gleitman , 2010)

Mensa – 132+

Nature vs. Nurture

Jenson (1960s) – found IQ of African Americans were one SD lower than white Americans

He advised that the summer education programmes for African-American children be scrapped – suggesting that since intelligence is genetically determined, environmental influences (ed programme) are minimal.

He was accused of advancing a biologically-deterministic racist attitude.

https://www.brookings.edu/wp-content/uploads/2013/01/9780815746096_chapter1.pdf

Nature vs. Nurture

Subsequent evidence points to a relationship between test score and the environment you grow up/live in.

A genetic propensity towards intelligence may or may not be brought out by a person's learning environment

Diathetic position.



Importance of teachers and education in developing young people's mental abilities

Intelligence and Educational Attainment



So...is
intelligence
a
meaningful
construct?

It does seem to predict, or at least be positively correlated with, educational attainment

Academic achievement of students in high school strongly correlates (.50 to .70) with intelligence scores (Jensen, 1998).

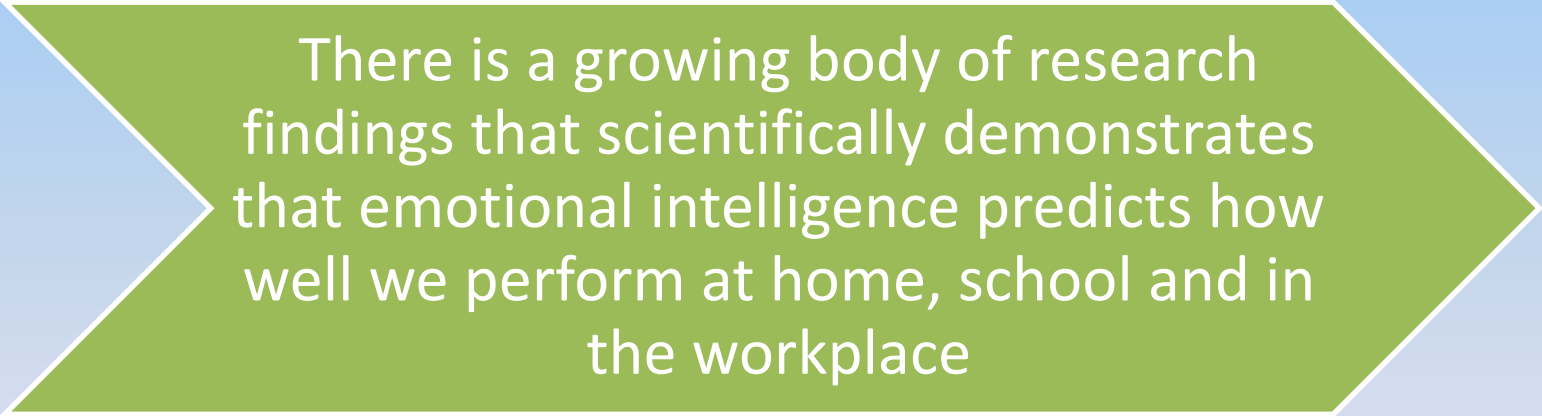
Deary (2004) 20,000 British pupils' IQ tested at 11yrs correlated with their GCSE results at 16yrs. <http://emilkirkegaard.dk/en/wp-content/uploads/Intelligence-and-educational-achievement.pdf>

The relationship was in large part associated with a mental speed component. After controlling for the mental speed component, the variance between general intelligence and academic achievement decreased from 30% to 6% (Luo, Thompson, & Detterman, 2003).

Intelligence is causally related to achievement - students' achievement relies most strongly on their cognitive abilities through all grade levels. Laidra, Pullmann, & Allik, 2007)

Emotional Intelligence

“the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships” — Daniel Goleman (1998)



There is a growing body of research findings that scientifically demonstrates that emotional intelligence predicts how well we perform at home, school and in the workplace

http://www.is-toolkit.com/knowledge_library/kl_files/Emotional%20Literacy-BrackettKatulak-2006.pdf

Emotional intelligence - Goleman (2000)

1. Self-Awareness that includes three competences:

Emotional Self-Awareness
Accurate Self-Assessment
Self-Confidence.

2. Self-Management that involves six competences:

Self-Control
Trustworthiness
Conscientiousness
Adaptability
Achievement Drive and Initiative.

3. Social Awareness that includes three competencies: Empathy, Service Orientation and Organizational Awareness.

4. Relationship Management that includes eight competences: Developing Others, Influence, Communication, Conflict Management, Leadership, Change Catalyst, Building Bonds and Teamwork & Collaboration.

Emotional Intelligence

Based on a study from the 60's - the marshmallow experiment

- 4 year olds and their self-control
- Children were followed up 12 years later

10 Years Later at 14 Years Old

Waiters (2/3 children)

- Better adjusted
- More popular
- More adventurous
- More Confident

Eaters (1/3 children)

- Stubborn
- Easily Frustrated
- Lonely
- 210 points lower on SAT

- Maybe a better predictor of success in life than IQ.
- Can Emotional Intelligence be taught?
 - What do you think?

<http://www.telegraph.co.uk/news/features/11117560/The-marshmallow-test-Stanford-University-experiment-that-claims-to-predict-a-childs-future-successes.html>

Emotional Intelligence and achievement

Fernandes and Rego (2004) - EI is an important predictor of students' **satisfaction with life, health and academic achievement**

Khokhar and Kush (2009) - high EI in executives brings about **better quality of work performance**.

Zafar (2005) found a relationship between EI and **self efficacy** of university teachers.

Schutte, Schuettpelez and Malouff (2000) found relationship of EI with **performance on cognitive tasks**.

Abdul-Azib (2006) - **negative relationship** between EI and **workplace deviant** behaviour of 73 lecturers of a university in Malaysia.

Carmeli (2005) - significant relationship of EI of senior managers with work **attitude, work behaviour, work outcomes and job satisfaction**.

Qualter, Whiteley, Hutchinson, and Pope (2007) --higher levels of EI facilitate students' ability to cope with the transition from primary to secondary school.

Individual Differences : Personality traits and academic performance

Whipple (1922, p. 262) concluded that it would be 'foolish (...) to suppose that native intelligence is the sole factor in academic success'.

Conscientiousness influences academic performance (Laidra, Pullmann, & Allik, 2007;

Five-factor model primarily descriptive, aiming to describe how people differ.

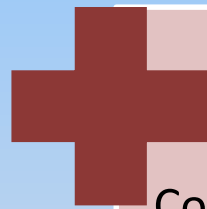
...some Big Five Factors such as conscientiousness and agreeableness account for unique variance in achievement after IQ has been taken into account (Conard, 2006 and Laidra et al, 2007).

Five-factor model (e.g. Costa & McCrae, 1992), - five dimensions (extraversion, neuroticism, agreeableness, conscientiousness, and openness-to-experience).

Personality traits related to academic performance.

Wagerman and Funder (2007) count the conscientiousness factor as a valid and unique predictor of college performance.

Openness to Experience (also known as Intellect) has been associated with academic success in school (Shuerger & Kuma, 1987) university -undergraduate (De Fruyt & Mervielde, 1996) and postgraduate (Hirschberg & Itkin, 1978) level.



Correlation between crystallized intelligence and the Openness to Experience trait (Brand, 1994).

Not always demonstrated predictive validity with regard to academic achievement (Busato et al., 2000).

Extraversion and Neuroticism

Relationship between Extraversion and academic performance to introverts' greater ability to consolidate learning, lower distractibility, and better study habits (Entwistle & Entwistle, 1970).

Sanchez-Marin, Rejano-Infante, & Rodriguez-Troyano (2001) - extraverts under-perform in academic settings because of their distractibility, sociability, and impulsiveness.

The negative relation between academic achievement and Neuroticism (Furnham & Medhurst, 1995) has usually been explained in terms of stress and anxiety under test conditions (Zeidner & Matthews, 2000)

Eysenck and Eysenck (1985) - the motivational effects of anxiety may be greater in highly intelligent students because they encounter little difficulty in their studying.

In this sense Neuroticism is a positive predictor in bright participants but a negative predictor in less talented participants.

Learning styles

A person's learning style has to do with the way he or she processes information in order to learn it and then apply it.

No one approach or style is more or less effective than any other. What does matter is whether it is suited to a particular everyday task or academic situation.

By understanding different 'learning styles' staff may gain insights into ways of making academic information more accessible to our diverse groups of learners.

Most students learn best when the style of presentation is in agreement with their preferred learning style.

Learning style is the application of a particular cognitive style to a learning activity. It is seen as relatively fixed.

A learning strategy is one of many different ways of dealing with learning tasks that a student develops to facilitate performance.

Learning styles

If students become aware of their preferred learning styles they will then be more able to recognise their strengths and weaknesses. By doing this they can then develop strategies when or if there is a mismatch between their preferred style and their academic situation.

Active - engage in physical activity or discussion.

Reflection — through introspection.

Sequential — logical progression of small linear, incremental steps. Analysis of concepts and prefer to follow information in a certain order.

Global — prefer to understand the whole and have trouble breaking it down into its component parts. Grasp information in large chunks and have difficulty analysing a topic from incomplete information. Excellent at synthesis.

Learning styles

It cannot be expected that one teacher can accommodate all students all the time because of the diversity of learning styles in any class and students using a mix of learning styles.

Visual — prefer to study graphs, look at models and pictures, illustrations.

Verbal — sounds, written and spoken words and formulas, prefer to listen and discuss.

Sensory — sights, sounds physical sensations, tactile, prefer to work with their hands, like to apply their knowledge, (kinaesthetic learners).

Intuitive — memories, ideas, insights, theoretical approaches.

Inductive — prefer to begin with experience or hard data; facts and observations are given. They infer the principles behind them.

Deductive - prefer to start with abstractions or principles, and deduce the consequences and applications. They may also be reflective, preferring to think about the topic by themselves or in pairs.

Learning styles

It has been found that dyslexic students prefer a global or imaging style and a multi-sensory approach. (Mortimore, T: 2003)

Dyslexia and learning style (Whurr publishers England) Whereas a lot of lecture-style teaching favours a sequential, verbal approach.

By varying teaching techniques and strategies in the classroom, teachers can reach as many students as possible.