

Educational psychology: quantitative research methods



**ASSIGN
BUSTER**

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Select a psychological discipline and identify the primary research methods and designs used in that discipline, and consider why that may be the case.

This assignment will look at a number of research methods and designs used in Educational Psychology. While there are numerous research methods and designs used in Educational Psychology, this assignment will focus on the use of quantitative research in the forms of interviews, questionnaires and case studies and will also discuss quantitative research in the form of psychometric testing used in the assessment of dyslexia such as the Wechsler Intelligence Scale for Children (Wechsler 1949) and the Kaufman assessment battery for children (Kaufman & Kaufman, 1983) and why each of the methods discussed are used, while looking at the validity and limitations of the methods and design.

Educational Psychology is defined by Wittrock (1989) as the scientific discipline concerned with the development, evaluation, application and principles and theories of human learning. Educational Psychologists complete research when they examine the cognitive development of young children, explore the relationship between teachers' preferences, educational experiences and classroom performance, and manipulate the structural features of lessons and study that result in student participation levels or explore the issues associated with the interaction of teachers and learners and learning contexts in situations (Berliner & Calfee, 2004). Alexander and Winne, (2006) suggest all of these areas of research contribute to the

science of learning and help develop guidelines for effective class room practises.

The two research methods that influence scientific educational research are quantitative and qualitative approaches. Educational research tends to be a mixture of both quantitative and qualitative research methodologies (Williams, 2011). Quantitative research methods are primarily experimental in nature and concerned with the causal relationships between dependent and independent variables, whereas qualitative research methods are primarily non-experimental and concerned with identifying and describing themes underlying human experience or the experience of a particular phenomenon (Della Porta & Keating, 2008). Willis (2008) argues that quantitative and qualitative research methods are often borrow elements or techniques from each other. For example, program-evaluation research, action research, and teacher-as-researcher methods are forms of mixed educational research design that use elements of both quantitative and qualitative methodologies (Johnson, & Christensen, 2008).

Educational psychologists rely on quantitative based research methods to help them make decisions about school programs and practices (Slavin, 2002). Stanovich and Stanovich (2003) define quantitative based research as a form of study that uses systematic methods that draw on careful observation or experimentation in order to make valid, credible and reliable, conclusions. The science part of educational psychology seeks to sort fact from fiction by using particular strategies for obtaining information (Johnson & Christensen, 2000; Kawachi, Kennedy & Glass, 1999). Wolfe (2010) argues

that the art of educational psychology lies in translating scientifically valid and reliable information into viable and effective classroom practice.

Quantitative research is objective, testable, and systematic (Kothari, 2011).

Gravetter and Forzano, (2015) suggest that It reduces the likelihood that information will be based on personal beliefs, feelings and opinions.

Quantitative research is based on the scientific method, an approach that can be used to discover accurate information. It includes these steps: conceptualize the problem, collect data, draw conclusions, and revise research conclusions and theory(Cronbach, 1957). Once data has been collected, educational psychologists use statistical procedures to understand the meaning of their quantitative data to help draw conclusions. They also compare their findings with what others have discovered about the same issue. The final step in the scientific method is revising research conclusions and theory (Mertens, 2014). Slavin and Davis, (2006) suggest that educational psychologists have generated a number of theories about the best ways for students to learn

McInerney, (2005) suggests that when an educational psychologist wants to test a hypothesis they can choose from many methods, such as observation . Scientific observation is highly systematic. It requires knowing what is being looked for, conducting observations in an unbiased manner, accurately recording and categorizing what was seen, and effectively communicating these observations (Hersen, Haynes & Heiby, 2003). A common way to record observations is to write them down, using shorthand or symbols. In addition, tape recorders, video cameras, special coding sheets, one-way mirrors, and computers can be used to make observations more efficient.
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(Coolican, 2009). Educational psychologists conduct research in laboratories at the universities where they work and teach, although laboratories often help researchers gain more control in their studies, they have been criticized as being artificial. In representational observation, behaviour is observed out in the real world (McInerney, 2005). Educational psychologists conduct representational observations of children in classrooms, at museums, on playgrounds, in homes, in neighbourhoods, and in other settings (Göncü, Jain & Tuermer, 2007).

Educational psychologists use interviews and questionnaires to find out about students' and teachers' experiences (Vaughn, Schumm & Sinagub, 1996). Interviews normally take place face-to-face, although they can be done over the phone or the Internet whereas questionnaires are usually given to individuals in printed form and can be filled out in many ways, such as in person, by mail, or via the Internet (Coolican, 2009). Good interviews and surveys involve concrete, specific, and unambiguous questions and some means of checking the authenticity of the respondents' replies (Ritchie, Lewis, Nicholls & Ormston, 2013). However Fowler (2008) argues that interviews and surveys are not without problems. One crucial limitation is that many individuals give socially desirable answers, responding in a way they think is most socially acceptable and desirable rather than how they truly think or feel. For example, some teachers, when interviewed or asked to fill out a questionnaire about their teaching practices, hesitate to admit honestly how frequently they chide or criticize their students (Loughran, 2002). Skilled interviewing techniques and questions that increase forthright responses are crucial to obtaining accurate information. Another problem

with interviews and surveys is that the respondents sometimes simply lie (Coolican, 2009).

Another type of research method used by educational psychologists are case studies (Woolfson, 2011). Crosling & Webb, (2002) define case studies as descriptions of “ real-life” experiences that illustrate important concepts and issues in a field of study . In other words, a case study is an in-depth examination of an individual or situation A case study presents a unique method for combining theory and practice in a problem-solving framework. Case studies differ from spoken or written statements, in that they typically do not contain outcomes or conclusions, but leave the reader to contemplate the most appropriate course of action (Crosling & Webb, 2002). Traditionally, case studies have been associated with business, medicine, and law. Recently, however, case studies increasingly have been used in education to help teachers and teacher-candidates develop essential problem recognition and resolution skills (Clandinin & Connelly, 2000; Elliott, Woloshyn, DiPetta, & Bennett, 2000).

Educational Psychologists use psychometric testing during the assessment for dyslexia. Lyon, Shaywitz and Shaywitz (2003) define dyslexia as a specific learning difficulty that is unexpected in relation to an individual’s cognitive abilities. Psychometric testing methods such as the Wechsler Intelligence Scale for Children (WISC) (Wechsler 1949), which is an individually administered intelligence test designed for children between the ages of six and sixteen (Cohen, 2011) and contains fifteen subtests that provide a comprehensive assessment of intellectual ability which are divided into ten core subtests and five supplemental subtests (Grizzle, 2011). The <https://assignbuster.com/educational-psychology-quantitative-research-methods/>

Wechsler Individual Achievement Tests (WIAT) (Wechsler, 1992) is also used, and is a comprehensive test that assesses academic achievement by testing the ability to apply cognitive skills and knowledge to graded expectations. It also includes nine subtests designed to assess specific areas within the areas of reading, mathematics, written language, and oral language (Johnson, 2011). Another psychometric test used in the assessment of dyslexia is the Kaufman assessment battery for children (KABC) (Kaufman & Kaufman, 1983), which is a consistent and valid measure of cognitive abilities for children aged three to eighteen (Hall & Noggle, 2011).

Psychometric tests are defined by Coolican (2009) as instruments that measure mental measurement and include personality scales and also include measures of mental ability such as intelligence, linguistic ability, creative thinking etc. Psychometric tests are mainly used in educational settings to help identify students who may need additional learning support (Stapleton, 2001). Vernon and Parry (1949) argue that the variables that psychometric tests such as the WISC and KABC scales, use, are always the best measures, and for educational purposes most of the relevant variables are measured by well accepted tests. They also suggest that this is one of the main arguments for the use of psychometric testing over interviews or recommendations from teachers (Vernon & Parry, 1949). Mislavy, Behrens, Dicerbo and Levy (2012) suggest that psychometrics is the measurement of educational and psychological construct.

As the WISC-V, WIAT-II and KABC-II scales are all variations on previous scales (i. e. the WISC scale is currently on version five) and have been validated by comparison with previous models they have concurrent validity <https://assignbuster.com/educational-psychology-quantitative-research-methods/>

(Coolican, 2009). Coolican (2009) also suggests that new personality and IQ tests are often compared with older but similar models that have been known to have good validity. Stapleton (2001) suggests that if an assessment score can be closely correlated with future performance, then the assessment used is said to have predictive validity, and that in turn the assessment can be used to predict the likelihood of future academic success or failure. However Atkinson, Atkinson, Smith and Bem (1993) argue that the degree of correlation between IQ scores and psychometric testing and people's academic achievement declines as a student moves up from primary school to higher education. Moreno (2011) states that group intelligence tests are more practical than individual intelligence tests as they are designed to assess several students simultaneously, however due to their tendency to be less accurate than individual intelligence tests, some authorities do not administer the use of group IQ tests. Due to numerous technical problems with IQ calculations, such as the fact that chronological age increases indefinitely, mental age does not, deviation IQ scores are used to interpret the results of IQ tests (Kline, 2013).

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