

A Literature Review to Examine the Validity and Reliability of Group Poster Presentations as an Assessment Method of a Module in an Undergraduate Nursing Degree Programme

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Abstract: *The introduction of a poster presentation as a formative assessment method over a multiple choice examination after the first phase of a three phase “health and well-being” module in an undergraduate nursing degree programme was greeted with a storm of criticism from fellow lecturers stating that poster presentations are not valid or reliable and totally irrelevant to the assessment of learning in the module. This paper seeks to investigate these criticisms by investigating the literature regarding producing nurses fit for practice, nurse curriculum development and wider nurse education, the purpose of assessment, validity and reliability to critically evaluate the poster presentation as a legitimate assessment method for these aims.*

Keyword:???

Introduction

Nurse education has evolved over 30 years in an effort to meet changing demands in healthcare provision (Longley et al. 2007). The UK population is both increasing and ageing having major implications on the requirements for the services of healthcare professionals (Mathers and Loncar 2006). The old “apprenticeship model” provided a practical based workforce, but was criticised as to whether it met the requirements of the health service as it did not produce adaptable practitioners Longley et al. (2007). Fitness for Practice (UKCC, 1999) attempted to make nursing more flexible and ensure practitioners were competent and fit for practice, and has subsequently been replaced by the NMC’s Standards for Pre-registration nursing education (2010) which describes progression points and levels of proficiency at the point of registration.

Graduate only course first started in the U.K in the 1990’s (Barton, 1996) was prompted by evidence which suggests that these “programmes will ensure that future nurses will be knowledgeable, competent and better equipped to address future public health challenges” (Davies, 2008), help in the preparation of more effective clinical nurses (Department for Education and Employment 2003) and more confident

in using research to help deliver evidence-based care (Newton, 1997). It is also suggested that the graduate nurse’s ability to provide more effective care will help reduce future patient mortality (Tourangeau et al, 2006). Commissioners of nurse education are supportive of graduate-only pre-registration nursing programmes (Spouse, 2001) believing that future graduate nurses will be more likely to help meet the quality and leadership agenda within future healthcare organizations. (Gonzalez and Wagenaar, 2005).

Curriculum development

In September 2012 The Higher Education Institution in which the author is currently employed embarked on a new curriculum developed to reflect the national changes in pre-registration nurse education as nursing moves towards being a graduate profession, and encompasses the revised Standards for Pre-registration Nurse Education (NMC, 2010). The challenge was to deliver the new curriculum in such a way as to promote deep learning and understanding, and engage students enabling them to link theory to practice to meet the NMC progression points (NMC, 2010). Marmots (2008) demonstrated quite categorically the “benefits of breaking away from lectures to other methods” (e.g. case discussion) which showed positive outcomes in terms of learning and student evaluation.

There is an abundance of literature from 1980's to present day which quite categorically demonstrating that "small group" teaching is superior to lectures in a range of outcomes such as student enjoyment (Costa, 2007) retention of information (Fisher et al, 2004) and active participation by students (Oakley et al 2004). Race (2010) states that in an ideal world all teaching would or should be in small groups.

However, there can also be disadvantages to small group teaching, especially if they are a repeat of the lecture, are didactic, non-participative and if there is a lack of good group dynamics (Wood, 2003). Good small group teaching should involve discussion, interaction, allow students to ask questions, clarify their knowledge and most importantly should build on concepts introduced previously that students have had time to dwell on and research themselves in order to promote deep learning (Davis and Harden 1999; Norman and Schmidt, 2000; Albanese 2000).

Methodologies, such as EBL, promote active learning and assist students to move from a basic understanding of information at the knowledge and comprehension levels to a higher level of understanding. Teaching through case study is regarded as a superior teaching methodology when compared with lectures in promoting a learner's critical thinking skills (Kim et al 2006). Some studies have found no significant difference in objective measures of learning by EBL, versus learning by lecture (Beers, 2005).

Examination of the literature reveals that interactive teaching methodologies promotes increased understanding and application of knowledge as well as "retention of factual knowledge" (Costa, Rensburg, and Rushton, 2007) and provides an opportunity for students to apply knowledge, evaluate learning needs, hone problem-solving skills, and critically evaluate resources (Lonser et al, 2006).

Enquiry-based Learning

EBL is an established approach to curriculum design and implementation, during which the students' knowledge, skills and values are organised around authentic problems which are then used to motivate students to identify and research concepts to solve the problem (Hattingh and Killen 2003; Lekalakala-Mokgele 2010). Unlike traditional approaches to teaching and learning, EBL applies principles of

learning acquisition, activates prior knowledge and allows for the development of information-seeking techniques (Harries et al, 2006). Students are not passive recipients of material; they are actively involved in learning where "they construct their own knowledge" as they are introduced to unknown learning situations where parameters may not be well defined and the task ambiguous – just like the real world (Massa, 2008).

EBL is considered to be both a method and a philosophy of education, the aims of which are to develop critical thinking, and enable students to take control of their own learning. In EBL students are active participants in the learning process and as a result they will become motivated to learn more and to integrate knowledge and skills into professional practice. EBL is more than a teaching approach it is regarded as an educational strategy which emphasises the accumulation of educational philosophy, learning objectives and educational values. EBL represents any form of learning that is motivated by enquiry, by asking for or seeking information in order to understand something (Schmidt 1993; Massa 2008).

There is growing international evidence to support the use of EBL as a learning approach as it offers the potential to bridge theory and practice, through student identification and evaluation of practice related problems (Price, 2003). EBL promotes problem-solving skills in students and is advantageous in contemporary nursing and midwifery practice, which requires individual practitioners to be proactive, enlightened, emancipated and to have the skills to transform knowledge into practice; attributes which are consistent with the skills and qualities of the future graduate nurse (NMC, 2010).

A recent study found that students felt "overwhelmed" at the prospect of having to embark on EBL or self-directed learning (Charbonneau 2012). Leamson (1999) noted that first year students in particular fear being "left alone". This reflects what our students had revealed at module review that they felt ill equipped to embark on EBL, yet it is necessary for them to develop these skills as early as possible to gain maximum benefit from the programme to become practitioners fit for purpose as discussed above.

The Purpose of Assessment

What is assessment? Historically assessment was seen as a method to measure what students know i.e. assessment of learning (Sutherland, 1996). Since the 1970's however research revealed dissatisfaction with traditional approaches of assessment (Broadfoot, 1996), with criticisms such as their inability to provide objective and reliable evidence of attainment (Raven, 1991), their negative impact on the quality of learning achieved (Crooks, 1989) all of which promoted the desire to harness the powerful "impact of assessment to promote learning". (Broadfoot, 1996 pg41). A more helpful definition of assessment cited by Klenowski and Wyatt-Smith (2014) is "the extent to which a student has demonstrated knowledge, skills, values and attitudes as the result of the teaching/learning process" (Queensland Studies Authority, 2012), demonstrating that it is not just the testing of rote learning. Although testing is usually considered to be a means of measuring qualities that are already present in a person, in actuality tests often produce the characteristics they propose to measure (Hanson, 2000). Therefore when developing an assessment one must be quite clear about its purpose (Newble and Cannon 2002), if one is not the consequences can be poor validity and reliability of assessment (Jolly and Rees 1998). If a deeper approach to learning is the desired outcome, then assessment must allow students to develop, demonstrate and apply these skills (Jolly and Rees 1998).

Assessment then can also drive learning, shape what students study, the approach to their learning and how much and when they work (Bloxham, 2016). Considered to be an integral part of the teaching and learning cycle (Elmwood and Klenowski, 2002) students can focus more on assessment than other aspect of their course (James, McInnis and Devlin, 2002). If assessment is to put student learning over evaluation of that learning, the priority of the assessment is transformed from assessment of learning to assessment for learning (Kearney, 2013).

As far back as 1999 Fowell et al identified that the evaluation of assessment is both the most important yet often poorly implied stage of the assessment cycle, and is particularly important in a curriculum where the learning outcomes of student-centred learning are emphasized. They go on to state that when crucial skills such as team working, communication, social skills, independent learning and problem solving are

important outcomes for the student often in medical education they are not assessed. This certainly seemed to be the case in the nursing curriculum where these skills are listed and most certainly desired for effective practitioners but there was no assessment of said skills or to drive students to acquire such skills. As assessment often drives learning, it seemed imperative that after evaluating our assessment a vehicle to promote these skills was incorporated into the module. Peyton, (1998) also states that the timing of the assessment is driven by its purpose. Klenowski and Wyatt-Smith (2014) further state that that the timing closely correlates with the validity of assessment; therefore the "poster presentation challenge" must be as early as possible in the course as possible so students could use these skills to effectively embrace the EBL curriculum. This is reinforced by Pitman et al (1999), who state that assessment can be a decision making process, not just a measurement process. Newton, (2007) further reminds educators of the importance of clarifying the purpose of educational assessment which in this case is to drive students to develop the skills necessary to embark on their EBL curriculum, not to "judge", "standardise" or "qualification". Black (2001) clarifies this stating that the task of assessment has moved from focusing on how much knowledge a student has to encouraging students to "enrich" themselves with new skills. On reflection, this was certainly lost both to students and tutors as it was poorly described in both the module handbook and in the marking criteria. It is little wonder then that both groups failed to see the posters validity!

Poster presentation as an assessment method

Described by Handron (1994) more than 20 years ago, poster presentation is 'as an experiential learning activity that stimulates curiosity and interest, encourages exploration and integration of concepts and provides students with a novel way of demonstrating understanding'. They are an excellent alternative for developing communication skills, involving students in the assessment process, encouraging students to investigate a topic thoroughly, promotes a positive attitude to learning and helps develop skills of accessing literature (Berry and Houston, 1995).

Although published accounts of their use are scant in this country, posters are being used increasingly as a method of teaching, learning and assessment in nursing (Pelletier 1993, Rush et al 1995, Wharrad et al,1995). Bevis and Murray, (1990) state that their development was a reflection of the need to develop new teaching strategies and support collaborative learning. A positive attitude to learning is seen if the relevance of research theory to nursing practice is recognized and enhanced through teaching and learning approaches that support the theory-practice link. The poster facilitates applying the theory of research and nursing to the practice setting, and enables the development of transferable skills which will ultimately serve to enhance care delivery (Moule, 1998). However, much of the published literature relates to the process of developing a poster (Sherbinski and Stroup, 1992; Cullus, 1995; Gray, 1995; Thomas, 1995; Beyea and Nicoll, 1998; Nemich, 2000; Woolsey, 2003), the utility of posters in different settings (Pelletier, 1993; Handron, 1994; Moule et al., 1998) and the benefits and limitations of poster presentations (Miracle and King, 1994).

The design and production of educational posters as an assignment could drive learning in a logical progression that benefits nursing students and educators. The activity engages student learning in a content area and in the development of professional skills by producing a tangible, educational resource. In doing so, the assignment harnesses poster design and production skills that have potential benefit for future professional development. This activity embodies principles of sound learning theory and is problem based in approach. Creating posters satisfies many of the objectives instructors strive to achieve. This educational strategy may be applied to many areas within nursing and may be adapted and developed as an alternative assignment that allows for many learning styles (Halligan, 2007) as they represent a creative and stimulating assessment method in undergraduate nursing programs, with benefits for both students and instructors that move away from traditional methods such as case studies and examinations (Brown & Knight, 1994).

Students' ability to integrate and apply information beyond the educational setting and into the practice domain can be realized with this type of assessment strategy (Handron, 1994). Displaying posters presents

further learning opportunities because students can view and benefit from the work of their peers.

The sequential organisation of the poster assignment is consistent with the philosophy that assessment should drive learning (Conyers & Ritchie, 2001). Students are strategically led through the process so they begin the design and development stage of their posters with some background experience and a plan. This approach fosters critical thinking, communication, creativity, analysis, and problem solving skills, and it allows for different learning styles. Billington (1997), having conducted a comparison of student performance in poster presentation and essay work, suggested that diversity of assessment strategies is needed. This activity engages students in a collaborative planning process that satisfies their need to know the how, what, and why of learning. The structure of the assignment encourages a self-directed approach so students take control of the goals and purposes of learning. The sequential organisation of the assignment guides students in the transition from dependent to self-directed learners. These considerations are in keeping with adult learning principles (Knowles et al., 1998). The literature outlines some pros and cons of posters. If new to students time is needed for instruction (O'Boyle, 2011), time and space is needed to complete them (Summers, 2005), students can be nervous about presenting (Bracer et al, 1998) and there are issues with reliability, with the need for clear criteria for good inter-rater reliability (Summers, 2005). That would certainly be a concern however, the pros such as playing to the strengths of more visual learners, students enjoying and engaging well with the activity (Walker, 2005), but more importantly is authentic and therefore valid especially if used to drive learning (Kelsch and Werremeyer, 2011). As our posters were completed in groups, extra consideration must be taken in assessing groups. In general students enjoy group work (Huntley-Moore, 2005; Picard, 2011) as it allows for social interaction and employs problem solving skills (more of the objectives which this task aims to promote), however, one must be careful regarding marks: i.e. individual or group etc. (Oakley et al, 2003). While the students concerns were articulated with comments such as "what's the point", or "group marking isn't fair", reflecting concerns of reliability, tutors comments seemed to reflect an overall reluctance to embrace non-traditional assessment

methods. Comments such as “it would be easier to set an MCQ”, or “these trendy methods don’t test knowledge at all”, a common phenomenon literature would suggest (Falchikov, 2013), perhaps indicating a lack of understanding of the validity of the task.

Reliability and Validity

These two concepts are often seen as separate dimensions or perspectives of the same problem which interact with one another (Black and Wiliam, 1998). It is argued that “the quality of any particular assessment is typically addressed in terms of measures of reliability and validity” (Broadfoot and Black, 2004). Broadly speaking reliability was generally seen as the guarantor of fairness (Pitman et al, 1999), and was seen as of key importance in high- stakes testing (Sadler, 1989). Validity was seen as the worth of the assessment and its contribution to learning and therefore seen to be of superior importance to formative assessment (Klenowski and Wyatt-Smith, 2014). A comprehensive number of authors have written and explored these concepts such as Linn, Messick, Wilson, Newton, Nuttall and Stobart, with much debate regarding each’s importance, and current thinking concludes that rather than being separate notions, validity should be of greater concern (Matters et al 1998), and although important, without validity, reliability is trivial. More recently authors such as Matters have argued that essential components such as rigour, accountability, credibility and authenticity are more helpful concepts.

Reliability is concerned with the generalizability of results i.e. could they be replicated how dependable are they (Wood, 1991), or put succinctly it refers to the consistency of results (Miller et al 2009) In summative assessment there is a premium on reliability, since these are results which have to be communicated in a final form to the world at large. As a result, meanings must be clear, standards known and reliability assured (Brown and Knight, 1994). Gipps (2010), writes that with the psychometric model there is an emphasis on standardisation and reliability: if individual’s are to be compared, then we need to be certain that the assessment was carried out in the same way for all. Unfortunately there is a plethora of factors which can affect the results obtained including variations in grading, variability of pupils from day to day, from question to question etc. (Black, 2006). No test is

perfectly reliable, even if tests are repeated to obtain the students “true” score thus reducing the possibility of the student “having a bad day”, other factors described as construct-irrelevance variance (Black and Wiliam, 2002) can effect scores. Many assessment methods such as multiple test results can be refined such as employing Cronbach’s alpha to ensure internal consistency of a test (Cortina, 1993), or splitting the test over several sittings to reduce the chance of a student having a “bad day”. Reliability in its purest form is particularly hard to achieve in assessment methods dependent on the subjectivity of markers, (Bloxham, 2015). In the case of the poster presentation of particular concern amongst both students and tutors was “marker or rater error”, a concept which has been identified and known about for over a century (Starch and Elliott, 1912). Assessor inconsistency is well acknowledged and investigated describing key sources of variation to be knowledge, experience, values and institutions and habit (Read et al 2005; Smith and Coombe 2006; Wolf, 1995).

Brown, Race and Rust (1995) propose that there will always remain a degree of subjectivity in assessing. The effect is greatly reduced by the processes of formulating clear criteria, focused objectives and making these available to students, as discussed under competence based assessment earlier. Summer (2005) states that poster presentations must have clear criteria for good inter-rater reliability. However, assessment criteria may also cause variation if for example the assessor doesn’t understand what they are judging (Baume et al 2004), if they don’t agree with it and therefore don’t apply it (Eccestone, 2001; Orrell, 2008) interpret them differently (Webster et al, 2000) if the marking criteria is not clear (Moss and Schutz, 2001) or if assessors use their “own” criteria (Price, 2005) which is particularly damaging if these are hidden from other tutors and students (Hunter and Dochery, 2011). Furthermore, a source of tension with regards to our poster presentation’s was when it emerged that different assessors concept of “good” compared to “very good” or “excellent” as different as some thought it was excellent for a first year, or “good” for an undergraduate, this problem of differing opinion of grading is also well documented (Grainger et al 2008; Hand and Clewes, 2000). The biggest doubt voiced by tutors and students with regards to consistency was concerns regarding whole group allocation of marks. Abernethy and Lett (2005) describe high student’s

fears that some students who do not contribute would achieve a high mark unfairly, Kayes et al (2005) describe these people as “free riders”. Conversely, Chapman et al. (2006) and Cleford (2007) found that some highly motivated students can become extremely discouraged by such free riders and don’t put time and effort into their group work seeing it as a waste of resources therefore disadvantaging themselves. There is a wealth of literature emerging on various methods on how to deal with free riders (Walvoord, and Krishnan 1997; Deeter-Schmeltz and Ramsey 1998; Dommeyer 2007; Dyrud 2001; Haas, Haas, and Wotruba 1998; Rust 2001), however they often describe one particular idea or mechanism and there is little empirical evidence regarding how effective they actually are! A study by Maiden and Perry (2010) despite having limitations namely only being a one site study with small numbers, did reveal no matter which of the 6 mechanisms employed to deal with free riders the students felt reassured, more confident, less frustrated and were more likely to engage with group projects if employed. It was a resentment regarding a lack of fairness and transparency in reward systems which could benefit free-riders, both in that study and reported by my students and tutors that lead to concerns over reliability. Despite employing a two marker system as recommended (Tisi et al 2011) and a robust internal and external moderation of marks (Bloxham,2009) both of which are regarded as good practice we were still faced with uncertain reliability and certainly a lack of faith in the robustness of the marking both by students and tutors when marks were published. Bloxham, (2015) states that perhaps one must embrace the fact that it is impossible to ensure reliability in some assessment methods and that the way forward is to live “with a large element of unreliability” and a recognition that judgement is not measurement (Yorke, 2011). Perhaps as proposed by Bell et al (2013) if we are honest with students and help them understand that the assessment criteria is both complex and a guidance rather than a prescription they will be less dissatisfied. What must be remembered however is that this requirement for standardisation has implications for the assessment method which is selected, and the seeming obsession with reliability has meant that issues of validity have been “over-ridden or ignored”, (Gipps, 1994). This certainly seemed to be the case with the tutors involved with the poster presentation as criticisms

were levelled at the minor problems of comparing student with student or marker to marker and calling for a robust, in terms of reliability assessment method, such as exam, without stepping back and reflecting on whether such a “test” after 6 weeks in university would be of any benefit whatsoever i.e. would it be valid.

Validity is a more complex concept, and central to any assessment (Gardner, 2012). Defined by Miller et al (2009) as the adequacy and appropriateness of the uses of assessment and results. Validity is the extent to which the indicant measures what it claims to measure (Linn and Baker, 1996). Validity has a number of aspects including the appropriateness of the results and that it is only specific to some particular uses or interpretation. In other words in one module one assessment method could be highly valid yet lack validity if applied to another module, or be valid means of assessment for a formative test but not summative and vice versa (Shepard, 1997). Furthermore, it has four major considerations namely content; how well it represents the tasks measured (Black and Wiliam, 2006), construct; how well it measures quality (Gardner,1992) as well as assessment criterion relationships and consequences. Validity is a complex and much discussed concept in the literature and an abundance of descriptions and definitions emerge. Stobart (2012) sums the notion of validity up as “the purpose of the assessment, whether the form of the assessment is fit-for-purpose, and whether it achieves it’s purpose. Central to this is knowing what the intention was in using it and how well this intention was met (Kane, 2006). Threats to validity then are quite simply those things that get in the way of the assessment assessing what it ought to assess (Shepard, 1997). “Authentic assessment” is a term used to describe an approach where the assessment task closely matches the desired performance and takes place in an authentic context (Broadfoot, 1993). Gipps (2010) describes how authentic assessment captures the task. It is difficult to see how the higher order skills that are hopefully being learned by setting this task could possibly be assessed by any other means! Although this sounds simple, there is much confusion regarding the purpose, suitability and the point of the assessment. Even if it is clear what the purpose of the assessment is, the suitability of a particular method may not be valid to assess it, and thirdly there is a need for clarity by both teachers and learners about what is being learned (Gardner, 2012). Sadler (2010) argues it

is easier to learn when we know what we are learning, and we need to know the required standard: and warns that failure to achieve such clarity will be a threat to validity. To tease out whether one's assessment method is valid Stobart (2008) suggests answering three basic questions:

1. What is the principle purpose of this assessment?
2. Is the form of the assessment fit-for purpose?
3. Does it achieve its purpose?

Conclusion

On reflection it is little wonder why both tutors and students were sceptical of the poster presentation. Firstly, it is an assessment for learning. The literature seems quite clear that posters are a valid assessment method as a means to promote learning and equip students with the desired skills. The purpose of the poster was assessment for learning so students could learn skills of literature searching and group/team working therefore the principle purpose as described by Stobart is confirmed. These skills are necessary for the students to acquire both to progress successfully with their course and to become capable practitioners, therefore it is indeed "fit for purpose", the second criteria. What of the third, does it achieve its purpose? Criticisms were levelled at the assessment saying it didn't test student knowledge, distinguish between students successfully, account for "free riders" and there was massive discrepancies between markers. In other words it was an unreliable assessment method for a summative assessment. It does not assess knowledge of the module content in any way, it is not therefore a valid assessment of learning. The problem quite clearly lies with what Stobart describes as the clarity of both teachers and students about WHAT is to be learned. The lack of water tight reliability of marks could be accepted if both parties accepted that the poster is an assessment for learning, to develop skills, a formative challenge to help them to progress in their degree. This was not made clear in the module booklet nor was it adequately explained to students. Furthermore, students were not furnished with the marking criteria, they were in the dark with regards to what they were expected to achieve. Vygotsky (1978) describes the "zone of development", and encourages giving help so students can achieve best performance rather than withholding help to produce typical

performance. Shepard (2000) describes "transparency" for students and urges educators to ensure students have a "clear understanding of the criteria by which their work will be assessed". Furthermore, by allowing students to see criteria and making clear the points in their learning these criteria are likely to be applied, a "community of shared understanding of the assessment process" is promoted (Elwood and Klenowski, 2002). Having access to evaluation criteria satisfies a basic fairness principle - knowing the rules by which their work is judged. This helps to achieve the notion of making thinking visible and making excellence attainable (Shepard, 2000). Furthermore, mechanisms for reporting "free riders" and questioning students individually following group work will be clearly explained to reassure students and tutors that this potential lack of reliability would not necessarily be quashed but minimised as much as possible.

Furnishing students with skills is valuable but of little use without accompanying team working abilities (Angelo and Cross 1993; Roberts et al. 2006). Employers and professional bodies (such as nursing) both rank the ability to communicate, cooperate, collaborate and compromise with others as crucial attributes for graduates seeking employment (Chapman et al. 2006; Cohen and Bailey 1997; Johnson and Johnson 1996; Liden et al. 2004). Furthermore, students need to learn these abilities, but they are difficult to "teach", therefore an assessment method of poster presentation to drive the learning especially, so early in the course, so they can utilize these skills during the rest of their EBL course is highly valid. If there is adequate honesty regarding potential or maybe inevitable risks to reliability, and that transparency of marking criteria, the purpose of the assessment and robust guidelines for group allocation of marks one could be confident that both students and tutors will have more confidence in the process and embrace it as a worthwhile exercise. Lastly, with regards to colleagues reluctance to embrace non-traditional assessment methods, writing in our own universities reflections magazine Bloxham writes "we need valid assessments for modern graduates; including essential skills such as team work, communication, problem solving and leadership", and that the University policy on assessment stipulates that "assessment practice should promote effective learning". Using such assessment methods is no longer

“progressive”, “trendy” or “forward thinking”, it is imperative.

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