USING EDUCATION INTERVENTIONS IN FALLS RESEARCH:
a framework for evidence-based education design
# Table of Contents

Table of Contents............................................................................................................. 1

Workshop Aim.................................................................................................................. 2

Workshop Objectives......................................................................................................... 2

Introduction ....................................................................................................................... 2

Challenges of designing falls prevention interventions requiring education............... 3

Challenges of designing falls prevention education interventions............................. 3

Definition of terms: ........................................................................................................... 3

Research methods VS Educational methods: what is the same, what is different?..... 4

What is the current state of education interventions reported in falls prevention research?...................................................................................................................... 5

What makes a quality education program? ..................................................................... 7

A word on learning domains, theories and methods....................................................... 8

Evaluation frameworks and models .............................................................................. 15

Designing an education program (the 4 Ps approach).................................................. 18

PRESAGE and PLANNING (often needs to be considered jointly).............................. 20

PROCESS ......................................................................................................................... 21

PRODUCT “The outcomes”.............................................................................................. 24

Conclusion ....................................................................................................................... 25

References ....................................................................................................................... 26

Useful links ....................................................................................................................... 30
Workshop Aim

The aim of this workshop is to explore the key features of best practice educational design as applied to falls prevention research.

Workshop Objectives

This workshop will provide you with the opportunity to:

- Differentiate research methodology from educational pedagogy
- Describe the main educational theories that apply to experiential learning
- Discuss and critique the quality of education interventions reported in falls prevention interventional trials
- Apply a framework and model of educational design to guide research design
- Apply a model of educational evaluation to measure both process of learning and translational patient related outcomes within lines of enquiry
- Describe the key elements of education interventions to report in publications of educational interventions
- Apply educational principles to own research activities

Introduction

This workshop will develop your knowledge and skills for designing education programs for falls prevention research. It will include enhancing your skills in how to critique, develop, implement, measure and report educational interventions and outcomes. These skills will then be applied to the falls prevention research context to support quality research design. The workshop will use interactive small group methods such as discussions, brainstorm activities, paired exercises, and small group practical hands on activities to explore the learning objectives.

At the conclusion of the workshop you will be asked to reflect on key learning points and be offered the opportunity to provide verbal and written feedback on what has worked well in the workshop and what could be improved.
Activity 1: Your current experiences

**Your current experiences?**

What are your experiences of designing research in falls prevention?

What are your experiences of designing education in falls prevention research?

What are the challenges or complexities that you associate with designing education interventions in falls prevention research?

**Challenges of designing falls prevention interventions requiring education**

- Tendency to prioritise other elements of falls prevention interventions at the expense of fully developing the education intervention
- Examples of well-designed education are poorly described in the literature
- Experienced falls prevention researchers may not be experts in education methodology

Target audience for education not homogenous, so a ‘one size fits all’ approach is usually not appropriate, however, tailoring education to different types of learners is misinterpreted as a ‘non-standardised’ intervention. In contrast, other interventions can be tailored in a ‘standardised’ research protocol (e.g. exercise programs have levels and variations tailored to the participant). Challenges of designing falls prevention education interventions.

In addition to the above:

- Educational theory may not be utilised to design the education intervention
- Complexities in differentiating education interventions from other interventions in a multi-faceted intervention studies
- People who fall are not a homogenous group – education needs to be tailored diversity within the population of people who fall
- Paucity of published protocols, frameworks, procedures on educational interventions in health research more broadly and falls prevention research specifically

**Definition of terms:**

To begin with it is important to be clear about what defines a falls prevention intervention, and how an educational intervention aimed to prevent falls differs from a falls intervention that requires education. In considering this we have defined 3 key concepts.
Non-education intervention study

A study on one or more falls prevention interventions that does not include an education intervention e.g. Exercise program, vitamin D supplementation

Education intervention study

A study on one or more education interventions that does not include another type of falls prevention intervention e.g. Safe Recovery Program

Multi-faceted intervention study

A study that includes one or more falls prevention interventions, of which one or more may be an education intervention e.g. A study on risk alert cards, plus exercise program, plus hip protectors, plus an education program (Haines et al 2004). It may also include a falls intervention study requiring training on the intervention.

Activity 2: Research Methods compared to Educational Methods

What are the key features of research methods?

What do you think might be the key features of educational research methods?

Research methods vs. Educational methods: similarities and differences

Table 1: Comparison of research methods to education methods

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Underpinning conventions/theories</td>
<td>• Nature of the conventions are different</td>
</tr>
<tr>
<td>• Process driven</td>
<td>• Usually more difficult to control variables in educational research</td>
</tr>
<tr>
<td>• Scientifically based</td>
<td>• Measurable outcomes often different (i.e. patient/organisation outcomes difficult to find in educational research)</td>
</tr>
<tr>
<td>• Tailoring required to ensure ‘fit for purpose’</td>
<td>• Research may be more focused on quantitative approaches in falls interventions - education tends to use more qualitative approaches or mixed methods</td>
</tr>
<tr>
<td>• Need to balance what is ideal with what is feasible</td>
<td>• Researcher often delivers the education – an ‘insider’ rather than a ‘outside observer’</td>
</tr>
</tbody>
</table>
What is the current state of education interventions reported in falls prevention research?

In 2011 Lamb and colleagues published a taxonomy to classify interventions in falls prevention research studies with a limited mention of education interventions – termed “knowledge” interventions. This article has had 25 citations since publication with only one of those subsequent papers a review that has considered education interventions in falls prevention research in detail (Child et al 2012). The ProFaNE¹ outcome consensus group guidelines for the reporting of outcomes in falls prevention research does not include either educational interventions or outcomes (Lamb et al 2005). In addition to this, a recent review has found that the ProFaNE guidelines have had a limited effect on the standardisation of outcome reporting in falls research, highlighting the difficulties in application of standard setting in falls research reporting in general (Copsey et al 2016).

This suggests that the low profile of education interventions in falls research taxonomies, and a broader issue of lack of standardised reporting in falls prevention research emphasises the complexity behind meaningful description and reporting of falls prevention research outcomes, which include educational research components. One database of guidelines recommended for standardisation and quality of research reporting in the health sciences The EQUATOR network (http://www.equator-network.org/) lists only three education intervention oriented research reporting guidelines from a bank of over 300 reporting guidelines. One for reporting on OSCEs, one on the use of Simulated Patients and a third on team based learning in medical education (Simera, Moher, Hoey et al 2010). Some statements have been published on research reporting more generally that can provide some guidance as to how to report education research outcomes, such as the TREND Statement for non-randomised intervention trials (Des Jarlais, Lyles & Crepaz, 2004), and the TIDieR checklist and guide (Hoffmann, Glasziou, Boutron et al 2014).

Some recent publications in falls prevention research including education interventions include protocol papers (Williams et al 2016; Tiedemann et al 2014), a systematic review (Lee et al 2014) and numerous clinical trials ranging, for example, from investigations of nurse-led falls prevention education programs (Uymaz & Nahcivan 2016), interprofessional education in falls prevention (McKenzie et al 2016; Sullivan et al 2015; Mercer et al 2014), peer education programs (Khong et al 2015, Vernon 2010, Allen 2004), to hospital based education interventions (Williams, Hadler, Norting 2015; Hill, McPhail, Waldron et al 2015; Hill, McPhail, 

¹ Prevention of Falls Network Europe (ProFaNE)
Francis-Coad 2015; Zavotsky et al 2014) and multi-media education comparisons (Schepens, Panzer & Goldberg 2011; Hill, McPhail, Hoffman 2009). The reporting of interventions and outcomes range from cursory mention and no reporting of education based outcomes (i.e. reporting falls rates, length of stay, QOL or other measures), to detailed reports of education theory, process, design and education outcomes. It is a widely varied landscape.

The ‘good’ looks like this

- Clear deliberate design
- Well planned
- Well evaluated
- Well reported
- Embedded into research design
- Repeatable! Comparable!

The 'not so good' looks like this

- Missing major design details
- Not evaluated
- Not considered integral to the research process – more of an afterthought
- Ad hoc/ on the run design as you go
- Completely absent
What makes a quality education program?

Table 2: The features of quality educational design

<table>
<thead>
<tr>
<th>Item</th>
<th>Key questions to ask yourself</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose / Aim / Significance</strong></td>
<td>Is the purpose and rationale of the education program stated?</td>
</tr>
<tr>
<td></td>
<td>Is there a clear direction to the program?</td>
</tr>
<tr>
<td></td>
<td>Is there a satisfactory description of the significance of the program?</td>
</tr>
<tr>
<td><strong>Context</strong></td>
<td>Is the education conducted in a suitable setting?</td>
</tr>
<tr>
<td><strong>Learner characteristics</strong></td>
<td>Are the audience and their configuration stated (age/gender/level)?</td>
</tr>
<tr>
<td>Learner demographics</td>
<td>Is the program pitched towards an appropriate audience?</td>
</tr>
<tr>
<td>Pre or post qualification</td>
<td>Are the numbers of learners defined?</td>
</tr>
<tr>
<td>Learner numbers</td>
<td>Is there recognition of learner’s prior knowledge?</td>
</tr>
<tr>
<td>Prior learning</td>
<td>Is there recognition of learners’ prior experience?</td>
</tr>
<tr>
<td><strong>Teacher characteristics</strong></td>
<td>Is there a description of who is teaching the program?</td>
</tr>
<tr>
<td>Selection of teachers</td>
<td>Is there a selection process for teachers?</td>
</tr>
<tr>
<td>Teacher qualifications/experience</td>
<td>Are the teachers qualified and/or experienced on the topic?</td>
</tr>
<tr>
<td>Training on the program</td>
<td>Are the teachers qualified and/or experienced in teaching?</td>
</tr>
<tr>
<td></td>
<td>Is training on the program offered?</td>
</tr>
<tr>
<td><strong>Learning objectives</strong></td>
<td>Are the learning objectives stated?</td>
</tr>
<tr>
<td></td>
<td>Are they written in appropriate behavioural terms?</td>
</tr>
<tr>
<td><strong>Learning methods (‘fit for purpose’)</strong></td>
<td>Are the learning methods stated?</td>
</tr>
<tr>
<td>I.e. lecture, tutorial, simulation, skills laboratory etc…</td>
<td>Are the methods appropriate for the type of program delivered?</td>
</tr>
<tr>
<td><strong>Learning activities</strong></td>
<td>Is there are description of the learning activities?</td>
</tr>
<tr>
<td></td>
<td>Are the learning activities suitable for supporting learners to meet the learning objectives?</td>
</tr>
<tr>
<td><strong>Assessment of learning</strong></td>
<td>Is there an assessment of learners achievement of learning objectives (knowledge, skills, attitudes)</td>
</tr>
<tr>
<td><strong>Education evaluation</strong></td>
<td>Has an evaluation been planned?</td>
</tr>
<tr>
<td></td>
<td>Is the evaluation method appropriate?</td>
</tr>
<tr>
<td></td>
<td>Has an evaluation been conducted?</td>
</tr>
<tr>
<td></td>
<td>Are the education outcomes reported for process (learner’s views on the teaching)</td>
</tr>
</tbody>
</table>
A word on learning domains, theories and methods

Domains of learning

In educational terms, there is more than one type of learning. In the late 1950s, Dr. Benjamin Bloom described three learning domains:

- **Cognitive**: (Knowledge or intellectual capability) “Think”
- **Affective**: (Attitude or feelings, emotion, behaviour) “Feel”
- **Psychomotor**: (Skills – manual or physical) “Do”

Whilst this might seem a bit theoretical, it is important to understand these domains as they can be thought of as part of the goals of the educational process, that is, that after your time with your learner, they should have acquired new knowledge, skills and attitudes.

Some characteristics of good learning are to encourage a change in your learner’s thinking, feeling and attitude NOT just remembering (Clark, 2007)

Experiential learning

Another educational theorist, Rogers, distinguished two types of learning: cognitive (meaningless) and experiential (significant). The former corresponds more to an academic type of knowledge and the latter refers to applied knowledge such as that which is learnt ‘on the job’ or in the clinical environment. The key to the distinction is that experiential learning addresses the needs and wants of the learner.

Rogers identified four important qualities for experiential learning to take place: Experiential learning:
• requires personal involvement
• is self-initiated
• is evaluated by the learner
• has a pervasive effect on the learner.

To Rogers, experiential learning is equivalent to personal change and growth. Rogers feels that all human beings have a natural propensity to learn; the role of the teacher is to facilitate such learning. This includes:

(1) setting a positive climate for learning,
(2) clarifying the purposes of the learner(s),
(3) organizing and making available learning resources,
(4) balancing intellectual and emotional components of learning, and
(5) sharing feelings and thoughts with learners but not dominating.

According to Rogers, learning is facilitated when: (1) the student participates completely in the learning process and has control over its nature and direction, (2) it is primarily based upon direct confrontation with practical, social, personal or research problems, and (3) self-evaluation is the principal method of assessing progress or success. Rogers also emphasizes the importance of learning to learn and an openness to change.

(From Culatta, 2015 [http://www.instructionaldesign.org/theories/])

Kolb’s experiential learning cycle

David Kolb extended this by developing the idea of an experiential learning cycle. The cycle is helpful to understand as it offers a way of explaining a cycle of experiential learning that applies to us all and it is a way of understanding an individual’s different learning style.

Kolb’s experiential learning cycle has four stages:

1. Concrete experience “Doing”
2. Reflective observation “Watching”
3. Abstract conceptualization “Thinking”
4. Active experimentation “Planning”
Kolb’s learning styles

Kolb’s learning styles model is linked to the experiential cycle and has four styles:

1. Diverging “Someone who prefers doing and experiencing”
2. Assimilating “Someone who prefers observing and reflecting”
3. Converging “Someone who wants to understand the underlying reasons, concepts and relationships”
4. Accommodating “Someone who likes to have a go or who tries things to see if they work”

Why is it important to understand Kolb’s experiential learning cycle?

As teachers, it is important to have an awareness of the experiential cycle of learning so that you can acknowledge and value each of the stages during your learner’s experience. You may also be required to tailor your teaching to ensure that all four stages are addressed and that you do not focus just on one area.

It is also helpful as it may be necessary to make some adjustments between you and your learner if your learning styles are not complementary but antagonistic or collusive. This will happen if you both tend to go for the same stages in the cycle.
Reflective activity

Think about Kolb’s learning cycle and your own personal learning style.

Are you naturally a ‘doer’, ‘watcher’, ‘thinker’ or ‘planner’?

How can you make sure that you address all four stages for your learners

When designing your education program, there are three important steps that you need to consider. Firstly, what do you want your learners to know or be able to do (learning objectives), how will you teach it (teaching methods), and how will you know that your learners have learnt anything (assessment of learning). This next section focuses on these three areas.

Learning objectives and Bloom’s Taxonomy

When it comes to teaching concepts rather than skills, teachers don’t possess in-built ‘understanderometers’ with which to see inside learners’ minds, so we need to create situations in which the learners do observable things that are evidence of their learning. This means we need to make student **behaviour** the focus of our student learning objectives. One of the most widely used way of organising planning learning objectives is according to Bloom’s Taxonomy of Educational Objectives. It includes 6 levels of learning that can be used to structure the learning objectives.

Bloom’s taxonomy is a useful tool to help develop your learning objectives, because it explains the process of learning:

- Before you can **understand** a concept, you must **remember** it.
- To **apply** a concept you must first **understand** it.
- In order to **evaluate** a process, you must have **analysed** it.
- To **create** an accurate conclusion, you must have completed a thorough **evaluation**.

From: [https://tips.uark.edu/using-blooms-taxonomy/](https://tips.uark.edu/using-blooms-taxonomy/)

Table 3 provides you with verbs matched to the levels of learning that are useful to use when designing an education program.
Table 3: Verbs for Bloom’s Learning Taxonomy

<table>
<thead>
<tr>
<th>Remember</th>
<th>Comprehend</th>
<th>Apply</th>
<th>Analyse</th>
<th>Evaluate</th>
<th>Create</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrange</td>
<td>Characterize</td>
<td>Administer</td>
<td>Analyse</td>
<td>Combine</td>
<td>Appraise</td>
</tr>
<tr>
<td>Define</td>
<td>Classify</td>
<td>Apply</td>
<td>Appraise</td>
<td>Compose</td>
<td>Argue</td>
</tr>
<tr>
<td>Duplicate</td>
<td>Complete</td>
<td>Calculate</td>
<td>Categorise</td>
<td>Consolidate</td>
<td>Assess</td>
</tr>
<tr>
<td>Know</td>
<td>Depict</td>
<td>Choose</td>
<td>Compare</td>
<td>Construct</td>
<td>Critique</td>
</tr>
<tr>
<td>Label</td>
<td>Describe</td>
<td>Compute</td>
<td>Contrast</td>
<td>Create</td>
<td>Defend</td>
</tr>
<tr>
<td>List</td>
<td>Discuss</td>
<td>Conduct</td>
<td>Critique</td>
<td>Design</td>
<td>Envision</td>
</tr>
<tr>
<td>Match</td>
<td>Establish</td>
<td>Demonstrate</td>
<td>Diagram</td>
<td>Formulate</td>
<td>Estimate</td>
</tr>
<tr>
<td>Memorise</td>
<td>Explain</td>
<td>Dramatise</td>
<td>Differentiate</td>
<td>Hypothesise</td>
<td>Evaluate</td>
</tr>
<tr>
<td>Name</td>
<td>Express</td>
<td>Employ</td>
<td>Discriminate</td>
<td>Integrate</td>
<td>Examine</td>
</tr>
<tr>
<td>Order</td>
<td>Identify</td>
<td>Implement</td>
<td>Examine</td>
<td>Merge</td>
<td>Grade</td>
</tr>
<tr>
<td>Quote</td>
<td>Illustrate</td>
<td>Interpret</td>
<td>Examine</td>
<td>Organize</td>
<td>Inspect</td>
</tr>
<tr>
<td>Recognise</td>
<td>Locate</td>
<td>Operate</td>
<td>Experiment</td>
<td>Plan</td>
<td>Judge</td>
</tr>
<tr>
<td>Recall</td>
<td>Recognise</td>
<td>Perform</td>
<td>Explore</td>
<td>Propose</td>
<td>Justify</td>
</tr>
<tr>
<td>Repeat</td>
<td>Report</td>
<td>Practice</td>
<td>Inventory</td>
<td>Synthesise</td>
<td>Rank</td>
</tr>
<tr>
<td>Reproduce</td>
<td>Relate</td>
<td>Prescribe</td>
<td>Investigate</td>
<td>Systematize</td>
<td>Rate</td>
</tr>
<tr>
<td>Restate</td>
<td>Review</td>
<td>Roleplay</td>
<td>Question</td>
<td>Theorise</td>
<td>Review</td>
</tr>
<tr>
<td>Retain</td>
<td>Sort</td>
<td>Sketch</td>
<td>Research</td>
<td>Unite</td>
<td>Value</td>
</tr>
<tr>
<td></td>
<td>Translate</td>
<td>Solve</td>
<td>Test</td>
<td>Write</td>
<td></td>
</tr>
</tbody>
</table>

Interactive teaching methods

Content delivery

In any education program it will be necessary to provide some theoretical content. The nature of the content delivery is often dependent on the cohort you are teaching. For example, if you are teaching busy clinicians who are often time poor, and have many clinical and other demands placed upon them, it is best to keep the content brief and potentially introduced using a variety of methods. This could include:

- Interactive lectures
- Short small group tutorials (brainstorming)
- Brief interactive workshop (lots of practical hands on group work)
- e-learning options (as a sole activity or an adjunct to other modalities, DVD, web-based)
Experiential learning through role-play

As a form of simulation, role-play is widely used as an educational method for learning about communication in health professional education. It has a sound theoretical basis for its use. Role-play is a simple and easy teaching method to use in the context of teaching a range of skills that form part of falls research. It can provide an excellent opportunity for learners to practise relevant skills, principles, models and techniques. Role-plays can take place either in pairs or triads or as a small group exercise conducted in front of a larger group following by a debriefing.

Experiential learning with simulated patients

Simulated patients are highly valued and have become an integral part of the teaching and learning experience in health professional education. Simulated patients provide opportunities for students and trainees to practise newly acquired skills. They can also provide learners with feedback on performance.

Simulated patients can be incorporated into your education program in the form of providing an example clinical vignette of a falls intervention strategy. Here students or trainees can learn directly from the example. The clinical vignette can either be delivered ‘live’ or be video-recorded. Simulated patients can also be included in your education program as feedback providers of their personal experience. This is an important consideration as it may be the only opportunity for health care students to hear directly from patients.

Peer assisted learning (PAL)

There are two forms of PAL relevant to falls education research.

1. Clinician to clinician learning: This is learning that occurs when “people from similar social groupings who are not professional teachers help each other to learn and learn themselves by teaching” (Topping, 1996). The use of this approach in health professional education is becoming increasingly common, varied and generally well accepted (Pluto et al., 2013).

If you wish to consider PAL in your falls prevention education strategy you are encouraged to undertake additional planning and employ specific implementation strategies such as assessing and building on learner’s educational skills, particularly relating to identifying goals for performance, and observation, feedback and teaching. (Sevenhuysen et al., 2016)
2. Older adult to older adult for patient based interventions: This is learning that occurs through a “range of interventions where information, values or behaviours are conveyed between the educator and peers who share similarities such as age or shared experiences” (Khong et al. 2015, p.2). In this context this is older adults who have experienced or been affected by falls, volunteering to deliver education programs to other adults in their community that may be at increased risk of falls. This approach to public health message delivery has been described as a potential method of increasing uptake of those messages (Snodgrass et al, 2005) and been applied to the falls context in several studies in the last ten years (Khong et al 2015, Vernon 2009, Peel & Warburton 2009). Peer to peer learning in the falls context and has been identified a credible method of increasing awareness of falls and falls risks in the older adult population, and inclusion of older adult volunteers in falls prevention interventions is favoured by older adults at risk of falls (Khong et al, 2016).

Experiential learning using video assisted review (plus smart phone technology)

Video recording and review of performance has been widely adopted in the teaching of a range of skills in the health professions and are regarded as essential components of an experiential skills teaching program. The use of video gives learners and educators the opportunity to repeatedly view an interaction and enable a focus on specific aspects of performance not possible under real-time conditions. These advantages also lend themselves to the teaching and learning associated with falls prevention educational research. The use of individual self-reflection of a recorded falls prevention clinical interaction can be used in educational interventions targeting the development of relevant skills. Recent developments in smart phone technology readily allow for the use of video recording for teaching and learning purposes and represent an easy, cost-effective way to embed video review into education programs.

Assessment of learning

Assessment in the education context is used to gauge the extent of a learner’s learning. It involves a judgement about performance. This can be achieved by either describing, recording, scoring, or interpreting information about a learner’s knowledge, skills and attitudes against specific criteria (remember the three domains of learning). Such criteria are designed to reflect safe and competent standards of clinical practice. In the clinical setting, these criteria might exist in a number of forms. They might be the knowledge-based objectives of a clinical teaching session, the sequential steps of a procedural skill, or description of required level of interaction between the student and a patient or team member. In the context of educational research, assessment findings can often become research outcome findings and are therefore an important consideration.
Constructive alignment

The concept of constructive alignment was first coined by the Australian educationalist John Biggs in 1989 and became known as the “Biggs Model of Constructive Alignment in Curriculum Design. Biggs defines the model as a coherence between assessment, teaching strategies and intended learning outcomes (or objectives). Biggs actually suggests that teaching and learning activities be designed second and the assessment approaches third. If this sequence is adopted, it is important that activities are designed which enable students to learn how to demonstrate achievement at the highest level described by the outcomes. This can be done by focusing on the verbs within the outcomes as described in Bloom’s Taxonomy.

Evaluation frameworks and models

To evaluate your education intervention, it is important to adopt an evidence-based approach to ensure structure, rigour and balance in the measurement of outcomes. There are many models and frameworks for education evaluation but a useful one commonly used in health education context is Kirkpatrick’s Hierarchy of Program Evaluation.

Kirkpatrick describes four levels of evaluation outcomes. These four levels can be adapted for use in health professional education evaluation. At the base (the lowest level) is learners’ satisfaction or reaction with the intervention, followed by the modification of attitudes and perceptions, the knowledge and skills gained, the changes in health professionals’ behaviours or practice, the change in the institution’s practice, and finally, at the top of the hierarchy, health care outcomes. Education evaluation should always start with the first level, however, it must be recognised that the higher levels of evaluation pose many challenges due to the difficulties associated with controlling the many variables related to educational research. For example, was it your education intervention alone that caused the benefit to the patient? Or was it the impact of the clinical component of the intervention, or both? All these things need to be considered.
The overall aim of evaluation is to assess the adequacy of the processes surrounding the education intervention (implementation and establishment); identify the impact of the intervention upon students and graduates and potentially compare between educational interventions.

Evaluation therefore needs to be carried out in four main areas:

- **Processes** surrounding the education implementation and design
- **Content** of the education and teaching methods used
- **Impact** through assessment of performance
- **Outcomes** via performance in the real clinical setting

When it comes to falls prevention research, you should aim to create studies at the higher end of the Kirkpatrick Hierarchy whilst still giving credence to the lower levels. All are important.

**Activity 3: A brief critique of education interventions in the falls prevention literature**

**A quantitative systematic review of falls prevention education for older adults**

A systematic review and qualitative synthesis of implementation of falls prevention programs, including those with education components


A randomised controlled trial of two education interventions to prevent falls


A protocol paper for a simulation based falls prevention education intervention


A qualitative study of peer education for community dwelling older adults


A multi-factorial falls prevention intervention RCT including an education intervention

Putting it all together: A model for combining clinical and educational research endeavour

It is clear that there is a need to view clinically based research in close association with education. You will find that an education component is often used as part of clinical research activity as either an intervention in its own right or education about a clinical intervention. Figure 3 outlines a model for applied research in the healthcare setting that overtly incorporates four major pillars. The first step is to identify a clinical problem (in this case falls and how to prevent falls). Organisational support is critical to ensure that all levels of the organisation are ‘on board’ with the research plan. This will help to drive the research process from the ‘top down’. Failure to address this level can often result in poor compliance. ‘Education Interventions’ and ‘Clinical Interventions’ need equal consideration and careful planning. The research methods should be ‘fit for purpose’ and measuring the right types of outcomes to seek to resolve the clinical problem.

A model of applied research in the health care setting – The Four Pillars

Figure 3: A model of applied research (Kiegaldie & Hopkins, 2016)
Designing your education program (the 4 Ps approach)

A useful way to develop your education intervention is to use the 3-P model for educational design. The 3-P model of learning and teaching, (presage, process and product), was originally devised by Biggs (1993). Biggs regards ‘presage factors’ as the socio-political context for education and the characteristics of the individuals (planners, teachers, learners) who participate in the teaching/learning. ‘Process factors’ are the approaches to teaching and learning and ‘product factors’ are seen as the outcomes of learning. We have added another ‘P’ into the mix – Planning. Planning robust educational research is so dependent on careful organisation and attention to detail that it warrants significant attention in the education process. The 4-Ps therefore help describe the educational context, the learner and teacher characteristics, the teaching and learning design, and the planning and organisational processes needed to develop a good education program.

Presage (influences and considerations)

Planning (preparation, organisation and planning)

Process (educational design)

Product (the outcomes)
PRESAGE and PLANNING (often needs to be considered jointly)

Activity 4: Start thinking about each of the following presage/planning factors

– Write down the presage (key issues) and action plan for each of the items you think are relevant for your education intervention in the following three tables?

<table>
<thead>
<tr>
<th>Item</th>
<th>PRESAGE (What are the issues)</th>
<th>PLANNING (Action Plan) What do you need to do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who are your learners?</td>
<td>How many learners will be involved?</td>
<td>Where are they located?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Will this be compulsory or optional?</td>
</tr>
<tr>
<td>Who are your teachers?</td>
<td>Who will be your teachers/facilitators?</td>
<td>Will they need training? How will this be managed?</td>
</tr>
<tr>
<td>What is the learning environment?</td>
<td>Where will the learning take place?</td>
<td>What challenges will the environment pose?</td>
</tr>
<tr>
<td>What resources do you have?</td>
<td>What resources will you need (technical, physical)</td>
<td></td>
</tr>
<tr>
<td>Competing curricula demands</td>
<td>Are there any competing educational demands?</td>
<td>How will you manage this?</td>
</tr>
</tbody>
</table>
PROCESS

Activity 5: What are the aims and learning objectives of the feedback program?

- Is this an education intervention or training on how to deliver a clinical intervention or a multiple educational approach?
- What is the overall direction of the intervention?
- What is the purpose?
- What are the anticipated learning outcomes?

Aims:
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Learning objectives:
1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________
Activity 6: What will you include in the teaching?

What is the rationale for their selection?

<table>
<thead>
<tr>
<th>Theme</th>
<th>Topics</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Activity 7: Describe some of the teaching activities that you might design

<table>
<thead>
<tr>
<th>Learning objective</th>
<th>What will the learners be doing?</th>
<th>What will the facilitators be doing?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E.g. learning objective</strong></td>
<td><strong>E.g. of potential activities</strong></td>
<td><strong>E.g. of facilitator activities</strong></td>
</tr>
<tr>
<td>Learners will demonstrate the 12 steps of the Safe Recovery Program</td>
<td>Progressively role-playing (peer to peer) each step of the safe recovery program</td>
<td>Set up the activity, observe the interaction, provide feedback to the learners</td>
</tr>
<tr>
<td></td>
<td>Implementing the safe recovery program to a simulated patient</td>
<td></td>
</tr>
</tbody>
</table>
Activity 8: What additional educational resources will you need?

For example, lecture material, scenarios, case studies, simulated patients, facilitator training materials, videos, role-plays, written learning activities.

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

PRODUCT “The outcomes”

Activity 9: What aspects of the program will you evaluate?

- Learner’s perceptions of the learning experience?
- Teacher’s perceptions of the learning experience?
- Educational planner’s perceptions of the learning experience?
- Learner’s demonstration of knowledge, skills and behaviour associated with falls prevention
- Changes in attitudes and perceptions about falls
- Organisational outcomes (e.g. decreased OH&S incidents to staff, economic benefits)
- Patient related outcomes (decreased LOS, decreased no. of falls, decreases in morbidity/mortality associated with falls, patient satisfaction with health care delivery)

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

Activity 10: What questions do you need to ask to evaluate the program?
Activity 11: How will you gather the data?

- Direct observation
- Self-reported questionnaires
- Reflective journal
- Validated tools
- Video-taped observations
- Interviews (focus groups or individual)

Activity 12: What will you do with the data?

- Report outcomes locally
- Publish findings
- Conference presentations

Conclusion

There are many challenges associated with designing high quality education interventions. Historically, the evidence base for educational design in falls prevention research has been poorly articulated in the literature. It is therefore critical that researchers are fully versed in what constitutes high quality education design so that their research is robust, well planned and fit for purpose in measuring the desired outcomes. When designing clinical interventions for falls prevention that have an educational component it is important that equal effort is placed on designing and planning for both aspects. The 4 Ps educational design approach, as advocated by Briggs is a useful framework to guide the planning process within the falls prevention research context.
References


Useful links

www.ldu.leeds.ac.uk/ldu/sddu_multimedia/kolb/static_version.php
http://www.instructionaldesign.org/theories/
https://tips.uark.edu/using-blooms-taxonomy/
http://www.equator-network.org/