Multimodal Instructional Design to Support The Development of Health Coaching Skills and Self-Efficacy in Physical Therapy Students

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Bloom’s Taxonomy

- **REMEMBERING**: Recalling relevant knowledge from long term memory.
- **UNDERSTANDING**: Making sense of what you have learnt.
- **APPLYING**: Use the knowledge gained in new ways.
- **ANALYSING**: Breaking the concept into parts and understand how each part is related to one another.
- **EVALUATING**: Making judgements based on a set of guidelines.
- **CREATING**: Putting information together in an innovative way.

Image from: http://expertbeacon.com/blooms-taxonomy/#.U3Q6XIfdXYo
Multimodal Instructional Design

- Instruction designed to meet the needs of a variety of learners
- Use of a variety of learning techniques

<table>
<thead>
<tr>
<th>Didactic lecture</th>
<th>Photos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>Animations</td>
</tr>
<tr>
<td>Music</td>
<td>Discussion</td>
</tr>
<tr>
<td>Video</td>
<td>Activities</td>
</tr>
<tr>
<td>Illustrations</td>
<td>Kinesthetic</td>
</tr>
</tbody>
</table>

AG Picciano (2009) Blending With Purpose: The Multimodal Model. RCET 5(1), 4-14
Multimodal Design Principles

<table>
<thead>
<tr>
<th>Guided Activity</th>
<th>• Interact with pedagogical agent who guides cognitive processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection</td>
<td>• Reflect upon correct answers during process of meaning making</td>
</tr>
<tr>
<td>Feedback</td>
<td>• Explanatory rather than corrective feedback</td>
</tr>
<tr>
<td>Pacing</td>
<td>• Control the pace of presentation of materials</td>
</tr>
<tr>
<td>Pretraining</td>
<td>• Pretraining provides or activates relevant prior knowledge</td>
</tr>
</tbody>
</table>

The Learning Challenge

What our third year DPT physical therapy students needed to learn within their Teaching and Learning course:
Patient Description

Mrs. Clark is a 57 year old woman who you have been treating for osteoarthritis of her left knee. She is overweight, and although you have helped her with her mobility and strength, she continues to have a fair amount of pain in her knee towards the end of each day. You are aware that her weight contributes to her continued problems with her knee.
Motivational Interviewing (MI)

A health-coaching technique that PTs can use to open discussion of health-related behaviors with their clients.  

Confrontation  
Telling patients they must change their behavior

Collaboration  
Motivational Interviewing

Miller and Rollnick 1991
MI: Listen to what the patient is saying and express empathy

- Open-ended questions, non-threatening questions:
  - YES: “Tell me about your physical activity”
  - NO: “Are you exercising?”

- Reflective listening:
  - Brief summary statements
MI: Explore their ambivalence

- Have patient discuss the pros and cons of current behavior
- Repeat back to them
MI: Assess readiness for change

How important is it for you to …. (stop smoking, start exercising more) right now?
MI: Support self-efficacy

- Convey your belief that the client can successfully change the behavior
- Reinforce that past success indicates they have the potential to be successful in the future
- Ask - on a scale of 1-10 how confident they are that they can change
  - Ask why they are higher than 1
MI: Ask about their plans and ideas for changing the behavior:

- Encourage the patient to come up with solutions, refrain from trying to suggest solutions
- Avoid the “expert” role
- Work as a collaborator/partner
Our learning objectives for the students addressed:

- Skills
- Self-efficacy (Social Cognitive Theory)
# Multimodal Module Design

<table>
<thead>
<tr>
<th>Educational Component</th>
<th>Multimodal Design Element</th>
<th>Bloom’s Taxonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLASS 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational lecture</td>
<td>Pretraining</td>
<td>Understanding and Remembering</td>
</tr>
<tr>
<td>Example videos</td>
<td>Pretraining</td>
<td>Understanding and Remembering</td>
</tr>
<tr>
<td>Class discussion</td>
<td>Reflection</td>
<td>Applying</td>
</tr>
<tr>
<td>Practice application of MI</td>
<td>Guided activity, reflection, feedback</td>
<td>Applying, evaluating</td>
</tr>
<tr>
<td><strong>CLASS 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactive practice session with standardized patients</td>
<td>Guided activity, reflection, feedback</td>
<td>Applying, evaluating</td>
</tr>
</tbody>
</table>

Practice MI with Standardized Patients

- Students pairs worked with one “patient”
- Observer (faculty/grad student)
- Given background information on patient
- Trade places half way
- “Time-out” and “time-in” to discuss with each other
- Immediate feedback and discussion between students, observer, and patient.
Assessing Student Learning

- Pre- and post- self-efficacy for motivational interviewing
- Student evaluation of session
Results – Self Efficacy  
(median scores)

<table>
<thead>
<tr>
<th>How confident are you that you could:</th>
<th>Pre Test</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide a brief intervention to motivate</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>Ask open-ended questions</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>Repeat back their thoughts and feelings</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>Ask about and then repeat their arguments <strong>against</strong></td>
<td>65</td>
<td>90</td>
</tr>
<tr>
<td>Ask about and then repeat their arguments <strong>for</strong></td>
<td>70</td>
<td>90</td>
</tr>
<tr>
<td>Assess the patient’s stage of change</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Assess a patient’s self-efficacy</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>Assess the importance to the patient</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td>Convey your belief they can successfully change</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Refrain from giving advice</td>
<td>50</td>
<td>80</td>
</tr>
</tbody>
</table>

Wilcoxon matched pairs signed rank, \( p < 0.05 \) for all items
Results - Descriptive

Student Evaluation Questionnaire

- 100% agreed or strongly agreed the session provided a useful technique
- 96% agreed or strongly agreed the session increased confidence in discussing physical activity
- 93% agreed or strongly agreed they are more likely to discuss physical activity with their patients
ACTIVITY

How can YOU apply multimodal instruction in your classroom?
Assessment of Learning

- Self-evaluation, peer evaluation, observer evaluation for assessing student coaching skill
- We used pre- and post-session self-efficacy questionnaires to assess the change in self-efficacy
- We used student evaluations on value of session
Take Away Message

- Multimodal instructional design engages students in active learning
- Improved PT student knowledge, skill, and self-efficacy for MI
- Multimodal instruction is applicable in a wide variety of classes/settings
Acknowledgments

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