Students’ Perceptions of an Experiential Learning Activity Designed to Develop Knowledge of Food and Food Preparation Methods

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ABSTRACT:
The aim of this study was to describe students’ perceptions of their learning after completing an experiential learning task that was designed to develop students’ knowledge of food and food preparation methods. The task required students to follow a special diet and then complete a daily online journal entry about the experience for other students to read and review. Twenty-five postgraduate Nutrition and Dietetics students participated in individual semi-structured interviews to evaluate the experiential learning activity. Interview transcripts were analyzed thematically using a constant comparative approach. Students perceived that the experiential learning activity successfully increased their understanding of the special diet they had been allocated, but learning from reviewing other students’ journal posts was less effective. The level of engagement and enjoyment resulting from the activity was more variable with some students finding the challenge of the activity a burden despite reporting good learning outcomes. Further evaluation of this approach to nutrition education in other areas is warranted.

Keywords: nutrition, dietetics, teaching, education, internet based

Practical Application:
This study describes the use of a personal experience following a special diet to help students learn about food and food preparation methods. Students felt that their knowledge improved despite finding the activity challenging at times.
Introduction

Nutrition and Dietetics education in Australia is focused on developing students’ competencies to practice as an entry-level Accredited Practising Dietitian (APD) (Dietitians Association of Australia, 2009). The required competencies cover a range of areas from foundation knowledge in biosciences through to very specific dietetic practice skills. The development of students’ competencies is a challenge for educators and recent studies have been conducted to identify the learning styles of dietetics students in order to inform curriculum design (Palermo, Walker, Brown, & Zogi, 2009). Traditional models of nutrition and dietetic education involve the development of knowledge through didactic style teaching prior to placement in professional settings where dietetic practice skills are developed. However, the learning styles of dietetics students are quite diverse and many students prefer to engage in practical activities in order to develop knowledge more effectively (Mitchell & Nyland, 2005; Palermo et al., 2009). Therefore, didactic style teaching may not be the most effective method to develop knowledge in many students.

Experiential learning is a process through which a learner acquires knowledge, skill and value from direct experience (Briers, 2005). The process of experiential learning involves four distinct stages including (i) concrete experience, in which the learner participates in a practical personal exercise; (ii) reflective observation, in which the learner reflects on their personal experience; (iii) abstract conceptualization, in which the learner relates their experiences and reflections
back to theory; and (iv) active experimentation, in which the learner applies the
theory and personal experience into practice (Kolb, 1984). Experiential learning
activities have been shown to improve clinical reasoning and critical thinking in
occupational therapy students (Coker, 2010); positively influence the attitudes of
nursing students to nursing research (Pugsley & Clayton, 2003) and have been
successfully implemented into large undergraduate nutrition classes (Bohn &
Schmidt, 2008).

The competencies required by entry level dietitians in Australia include a
knowledge of foods and food preparation methods, which provides the
foundation for skills in providing client-centered nutrition care. Experiential
learning has the potential to be an effective method of developing students’
knowledge of foods and food preparation methods, rather than traditional didactic
teaching methods. For example, in order for a dietitian to prescribe a specialised
diet for an individual, it is important that the dietitian has knowledge of relevant
foods and food preparation methods. A thorough knowledge of food and food
preparation methods requires an understanding of the range of food products
available, methods to acquire food products, and the impact of an individual’s
personal and social circumstances on food selection. Learning activities that
require students to actively follow a specialised diet may provide the opportunity
for students to participate in the four stages of experiential learning outlined by
Kolb et al., (1984). This may then facilitate improved development of students’
knowledge of foods and food preparation methods.
The aim of this study was to describe students’ perceptions of their learning after completing an experiential learning task that was designed to develop students’ knowledge of food and food preparation methods. Students’ perceptions of the cognitive (learning) effects and affective (enjoyment) aspects of the learning task were explored.

Methods

Overview

The Master of Nutrition & Dietetics program at Griffith University incorporates an introductory Food Science course that aims to increase students’ knowledge of foods, food preparation methods and special diets. In order to enhance students’ understanding of the range of special diets that are commonly prescribed by APDs, an experiential learning activity was incorporated into the Food Science course curriculum in 2011, named the ‘Special Diet Experience’. The ‘Special Diet Experience’ encompassed three main tasks (Table 1) and contributed to 10% of the overall course assessment. Each student was allocated a special diet and was required to follow the diet for seven days, complete a daily online journal entry regarding their experience, and respond to at least two fellow students’ journal entries. The complete list of allocated special diets is found in Table 2.

INSERT TABLE 1 ABOUT HERE
Participants

The research team invited all students who completed the postgraduate Food Science course (7044PBH Food Science), offered at Griffith University in Semester One 2011 as part of the Master of Nutrition & Dietetics program, to participate in the evaluation. Thirty-six students enrolled and completed the course, which incorporated the experiential learning activity. Each student was sent an introductory email, including a participant information sheet. Students were assured that participation would not impact on the grade-outcomes of the course, and data collection was scheduled after the completion of all assessment items. Students were provided with the contact details of a research assistant who was independent of the course-teaching team. Students interested in providing their feedback and perceptions were asked to contact the research assistant to arrange an interview time. The study protocol was reviewed and approved by the relevant university Ethics Committee.

Data Collection and Interview Design

Data collection comprised individual semi-structured interviews utilising open-ended questions to guide discussions. Interview questions were formulated by the research team using an inquiry logic that reflected the investigative aims of the study. Table 3 outlines each question, including the inquiry logic in relation to
generation of information from participating students. A research assistant, who was independent of the course’s teaching team, completed the interviews in an identical manner. Interview duration averaged 11 minutes, with a range of 6 to 16 minutes. Interviews were recorded with participants’ permission and were transcribed by the research assistant.

**INSERT TABLE 3 ABOUT HERE**

**Data Analysis**

Data analysis was conducted using a constant comparative approach to thematic analysis, including open and axial coding (Strauss & Corbin, 1998; Thorne, 2000). Firstly, sections of the transcripts were manually coded and organised into categories with common themes. Secondly, the identified themes were entered into a Microsoft Excel spreadsheet in order to link themes according to their properties and dimensions (Strauss & Corbin, 1998). Saturation of themes occurred when additional interviews did not produce new themes. Post analysis discussion and verification of themes was conducted to identify common or dissident viewpoints amongst interviewed participants. Original transcripts were edited grammatically to provide examples of key and/or contradicting themes.

**Results**

Twenty-five out of 36 potential participants participated in the study in June, 2011. Numerous key themes were identified regarding students’ perceptions of
the ‘Special Diet Experience’. These themes have been separated into two
topics: themes relating to the knowledge outcomes of the activity, and themes
relating to the engagement in, and enjoyment of, undertaking the activity.

**Knowledge Outcomes of the ‘Special Diet Experience’**

Students generally perceived that the ‘Special Diet Experience’ successfully
increased their understanding of the diet they had been allocated. Participation in
the activity resulted in students gaining insight into a prospective patient’s
experience of following the diet, and particularly resulted in enhanced label
reading skills, food preparation skills and knowledge of inclusion and exclusion
guidelines for the diet.

“I feel like I know heaps about my particular diet...knowing who it would be suited
for, and actually experiencing it yourself gives you real life suggestions that you
could help a patient with.” (Student 1, High Protein diet)

“It was really good because we learnt what the diet was about...I had no idea
about [my allocated diet] and then we had to actually learn what a person who
had this would have to do; how they’d have to prepare their meals and that sort
of thing, and the problems that you face when you go shopping.” (Student 8, Low
FODMAP diet)

“It’s taught me cooking styles...and types of foods that people on the diet would
have to eat. They’re not usually the foods that I would eat, so it gives you a better
idea...It introduced me to new sorts of things like that.” (Student 11, Vegan diet)
As a result of experiencing the allocated special diet, students reported high levels of patient empathy, and careful consideration when prescribing a special diet in future work environments.

“It gave me an appreciation of the diet...I have more empathy towards [patients], instead of saying ‘just follow it’, you actually know how hard it is to do” (Student 2, No Added Salt diet)

“I sympathize with [patients] a lot more. I am more likely to ease someone onto their diet rather than to say ‘Right, yesterday you ate normally and today you have to do this straight up’ because it’s really difficult...” (Student 20, High Fibre diet)

“I’d be reluctant to put [patients] on to a special diet unless they really needed it, because I know it’s not fun. It gives you a bit of empathy and it’s not something you want to do lightly” (Student 3, Texture Modified diet)

Students perceived that the experiential nature of the activity considerably enhanced their learning experience in comparison to other possible modes of learning such as didactic lectures or textbook readings.

“It’s good to get involved. In lectures you just get told things and hopefully absorb some of it, whereas this is experiencing something for yourself” (Student 3, Texture Modified diet)

“[The activity] is getting you to actually go out and do it, rather than just sitting in a lecture where someone’s just feeding you information which can be a little bit
boring. This is actually ‘here’s your task, go out and find the information...by 
doing something I learn better”. (Student 14, Low Fat diet)

“You had to go look and research up what the actual diet involved and it was 
really good because you were doing it instead of just being taught it, and you 
were putting it into practice...you could relate to it a lot better than just reading it 
off the lecture slides and studying it for an exam.” (Student 15, Vegan diet)

Although students reported positive improvements in their knowledge associated 
with their own allocated special diet, the same degree of learning did not appear 
to translate across all of the other special diets. The main reason provided 
related to the different learning experience of following their allocated diet, 
compared to reading and responding to journal entries about other diets.

“I got a really good understanding of what was required for my diet, but I don’t 
have a good understanding of the others... because I didn’t do them.” (Student 
25, Texture Modified diet)

“I’ve learnt a bit from reading other people’s blogs. I have to revise it though, I’m 
not very confident on it” (Student 17, High Iron diet)

“I know much more about my diet than I do about any of the other diets, because 
that’s the one I experienced...I think I’d have to look up all the other diets again, 
because I can’t remember details off the top of my head just from reading blogs” 
(Student 6, Lactose Free diet)

Student Engagement of the ‘Special Diet Experience’
Students reported mixed perceptions about their enjoyment in undertaking the ‘Special Diet Experience’. It appears that students placed value on the learning gained through the activity, despite finding the activity challenging.

“I think it was a good experience but I didn’t like doing it” (Student 3, Texture Modified diet)

“I really liked this assignment. It was challenging but it was definitely worth it...it’s going to help me in the future” (Student 15, Vegan diet)

“I wouldn’t say I liked it, but I can definitely see the value in it. I’m sure we will do it again in second semester, and I’m not looking forward to it, but it is a valuable experience”. (Student 10, Gluten Free diet)

“I liked it, and thought it was the best assignment we’ve had.” (Student 4, Low FODMAP diet)

Despite placing value in the overall learning activity, common difficulties were reported by students. These difficulties mainly related to time required to research and prepare foods in accordance with an allocated diet, as well as financial and personal implications of adhering to a special diet.

“Being uni students, you need a low budget and it was a bit costly because if you wanted to get into it you were trying new things.” (Student 19, Low Potassium diet)

“It was really expensive changing everything in your cupboard and that sort of thing, and it required a lot of planning.” (Student 8, Low FODMAP diet)
“It was time consuming and it was weighted quite low, but it was still a worthwhile experience” (Student 17, High Iron diet)

“You had to go out and actually buy for all of the other members of your family and whoever you live with.” (Student 18, Lactose Free diet)

Common references were made to the ‘fairness’ of allocating a special diet to each student. Interestingly, conflicting comments were made regarding the equity of following special diets which are perceived as simple, in comparison to complex special diets.

“The only criticism I have of the assignment is that I would have liked a more challenging diet. I know that sounds crazy, but you learn better from it” (Student 5, Lactose Free diet)

“I was actually glad I had a harder diet because it was better than some of the others where they didn’t have to change their diet much. It really made me research and I think that’s a better result in the end.” (Student 15, Vegan diet)

“It was good because it wasn’t very hard for me, and I know a lot of the foods that were appropriate.” (Student 24, Gluten Free diet)

“My diet was very complicated and involved a lot of preparation, whereas one had a diet that was exactly how she eats normally anyway... that’s not too good.” (Student 19, Low Potassium diet)

Discussion
The aim of this study was to describe students' perceptions of their learning after completing an experiential learning task that was designed to develop students' knowledge of food and food preparation methods. Students' response themes relating to the knowledge outcomes of the activity, and themes relating to the engagement in undertaking the activity were identified. Students felt strongly that the activity was very beneficial for improving their knowledge. The level of engagement and enjoyment resulting from the activity was more variable with some students finding the challenge of the activity a burden despite reporting good learning outcomes.

The learning activity used in this study was quite different from traditional didactic modes of teaching knowledge competencies in nutrition. The activity combined the experience of undertaking a new diet with a facilitated reflection process, and is typical of an experiential learning activity (Fowler, 2008). Participants had positive perceptions of the learning activity, which were partly attributed to the interesting, applied nature of the task and the dissimilarity of the task to their previous learning experiences. These perceptions support previous findings of the positive perception associated with experiential learning reported from Food Science students (Bohn & Schmidt, 2008).

Students perceived that the learning activity effectively increased their knowledge of food and food preparation methods related to their allocated special diet. Each student followed their allocated special diet for seven days, and completed a
daily online journal entry about their experiences. Due to the concurrent nature of these tasks, it is likely that the learning activity incorporated each of the four stages of experiential learning, including (i) concrete experience, in which the learner participates in a practical personal exercise; (ii) reflective observation, in which the learner reflects on their personal experience; (iii) abstract conceptualization, in which the learner relates their experiences and reflections back to theory; and (iv) active experimentation, in which the learner applies the theory and personal experience into practice (Kolb 1984). Therefore, the completion of the experiential learning stages may have enhanced the perceived effectiveness of the learning activity.

In contrast to their allocated special diet, students perceived that the learning activity did not adequately increase their knowledge of food and food preparation methods of other special diets followed by fellow students. Students were only required to read and to respond to journal entries about the other diets, whereas they were required to undertake a more personalized experience in following their own allocated special diet. As a result of these differences, students were not likely to have completed each of the experiential learning stages for the other diets, which may have influenced the effectiveness of this part of the learning activity. A more personalized approach to learning activities has the potential to enhance learning outcomes (Hickcox, 2002). Modifying the learning activity in the future so that students follow multiple special diets during the course may facilitate the completion of the experiential learning stages for each diet, and
subsequently increase knowledge. However, the time and resource implications of these modifications require consideration, and it may not be feasible within a single course.

In addition to developing knowledge of food and food preparation methods, students developed empathy towards patients who follow special diets due to the range of challenges associated with adhering to a special diet. Many participants perceived that the learning activity had enhanced their ability to build rapport and provide meaningful, practical advice to future patients. Interestingly, experiential learning activities have been shown to contribute to students’ professional development through the use of practical, applied learning tasks (Cronin & Connolly, 2007). In the case of Nutrition and Dietetics students, these additional learning outcomes are important because they are likely to supplement learning outcomes of related courses, and may contribute to students’ readiness for professional placement activities which are undertaken later in their training.

Students did not always report enjoyment of the learning activity. However, the level of enjoyment did not appear to be related to the perceived value of the activity. Many students reported favorable learning outcomes despite finding the activity challenging. Expectancy and task value have been suggested as factors influencing students’ motivation to learn (Wigfield & Eccles, 2000). However, factors influencing the motivation to learn are complex. Interestingly, Bohn and Schmidt (2008) demonstrated that student reports of learning outcomes from a
nutrition-based experiential learning activity were very high despite more variable
scores recorded about enjoyment of the activity. This suggests students’
enjoyment of the task may not always be crucial for achieving optimal learning
outcomes.

Conclusion

An experiential learning approach to the development of knowledge of food and
food preparation methods in nutrition and dietetics students can result in positive
learning outcomes. The level of engagement and enjoyment resulting from the
activity was more variable with some students finding the challenge of the activity
a burden despite reporting good learning outcomes. Further evaluation of this
approach to nutrition education in other areas is warranted.

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### Table 1 - Description and rationale for 'Special Diet Experience' components.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Follow an allocated special diet for seven days.</td>
<td>Students researched the nutrient recommendations for the diet, and followed any necessary grocery planning and food preparation tasks.</td>
<td>Increase familiarization with nutrition requirements for the special diet, including important foods and brands.</td>
</tr>
<tr>
<td>2. Complete an online journal entry for each of the seven days.</td>
<td>Each journal entry incorporated their daily nutrition intake, barriers to following the diet, and key learning outcomes.</td>
<td>Reflect on the experience of following the special diet, and disseminate this information to fellow students.</td>
</tr>
<tr>
<td>3. Respond to two fellow students’ journal entries.</td>
<td>Each journal entry response provided practical suggestions for students following diets, including strategies to overcome reported barriers.</td>
<td>Enhance familiarization with other special diets by reading fellow students’ experiences.</td>
</tr>
</tbody>
</table>
Table 2 - List of Allocated Special Diets

<table>
<thead>
<tr>
<th>Special Diet</th>
<th>Additional Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gluten Free</td>
<td>High Protein, Low Fat, No Added Salt</td>
</tr>
<tr>
<td>High Fibre</td>
<td>Lactose Free, Low FODMAP, Texture Modified</td>
</tr>
<tr>
<td>High Iron</td>
<td>Low Energy, Low Potassium, Vegan</td>
</tr>
<tr>
<td>Interview Questions</td>
<td>Inquiry Logic</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Describe how this learning task has contributed to the development of your knowledge of foods and food preparation methods.</td>
<td>Explore students’ perceptions regarding the effectiveness of the experiential learning activity in meeting the required learning objectives.</td>
</tr>
<tr>
<td>Describe how this learning task has contributed to your ability to develop special diet prescriptions.</td>
<td>Explore students’ perceptions regarding the effectiveness of the experiential learning activity in meeting the required learning objectives.</td>
</tr>
<tr>
<td>Describe why you did, or did not like participating in this activity.</td>
<td>Consider students’ perceptions regarding their enjoyment of undertaking the experiential learning activity.</td>
</tr>
<tr>
<td>In comparison with other learning tasks such as lectures, tutorials and other assignments, describe both the strengths and weaknesses of this activity.</td>
<td>Consider students’ perceptions of the experiential learning activity compared to other learning activities in the course.</td>
</tr>
<tr>
<td>Please outline the relative contribution of each of the components of the assessment to your overall learning.</td>
<td>Identify the components of the experiential learning activity which contributed significantly to student learning.</td>
</tr>
<tr>
<td>Describe any differences in the confidence you have about your food and food preparation knowledge for the special diet you followed compared with the diets followed by other students.</td>
<td>Determine the extent in which students’ experiences of their special diet translated to increased knowledge of other special diets.</td>
</tr>
<tr>
<td>Do you have anything else you would like to add?</td>
<td>Provide opportunity for open expression of views of the student.</td>
</tr>
</tbody>
</table>