Chapter 21
The Application of the Learning Sciences to the Design and Delivery of Student-Centered Learning Activities

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ABSTRACT

The goal of this chapter is to provide a framework for creating student-centered learning activities that rest on a firm theoretical foundation and are based on a definition that highlights the actual learner abilities involved in successful student performance. To achieve this goal, it is important to establish a definition of student-centered learning that can be used to guide the selection of the important pedagogical elements that must be addressed in the design of student-centered learning activities. Having established these foundational elements, the chapter provides a framework for the design of case-based instruction that incorporates teaching and learning principles derived from theory and research in the learning sciences.

INTRODUCTION

Creating the conditions for and the skills of effective adult reasoning and the disposition for transformative learning - including critical reflection and dialectical discourse - is the essence of adult education and defines the role of adult educator. Jack Mezirow (2009 p. 22)

The great educator, E.L. Boyer (1997), in his Scholarship Reconsidered, provided a perspective on the goal of teaching that can serve as a description of the goals of student-centered learning. Boyer stated, ‘‘…create a common ground of intellectual commitment...[and] stimulate active, not passive, learning and encourage students to be critical, creative thinkers, with the capacity to go on learning after their college days are over’’ (p. 24).

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There are many perspectives on student-centered learning and it is possible to develop an extensive set of characteristics derived from the literature. A report by Attard, Di Ioio, Geven and Santa (2010) titled *Student-centered Learning: An Insight into Theory and Practice* produced for the European Student Union, states the need for a student-centered focus in European education and draws a contrast between what they call conventional (traditional) and student-centered learning practices. Table 1 contrasts some of the elements of conventional instruction and the delivery of student-centered learning.

In their overview of the need for a student-centered approach to education in Europe, Attard, et al. cite MacLellan and Soden (2004, p. 254) who describe conventional instruction as “lecturing, note-taking, and memorising information for later recognition or reproduction.” They cite MacHemer and Crawford (2007, p. 11) who show that in contrast to the passive learning in conventional instruction, the student-centered learning experience is active, as it is based on the premise that “student passivity does not support or enhance … learning” and that it is precisely “active learning” which helps students to learn independently.

Attard’s et al. list suggest that student-centered learning activities should:

1. Produce student engagement
2. Explicitly target higher-level cognitive and metacognitive strategies
3. Require cooperation and opportunities for social learning
4. Assist students in becoming autonomous and self-regulated learners

Others such as Costa (2013) have focused on student empowerment as a critical goal of student-centered learning and lists five important characteristics of student-centered learning that might produce student empowerment.

The five key characteristics are:

1. The balance of power: faculty do not make all the choices;
2. The development of student metacognition, such as self-awareness as a component of course content;
3. The role of the teacher as facilitator of learning rather than a transmitter of knowledge;
4. Increased student participation and responsibility for learning, and
5. The purpose and processes of evaluation, to providing constructive feedback and to assisting with overcoming individual difficulties.

More recently, the focus of attempts to characterize student-centered learning has shifted to engagement. For instance, the Yerevan Communiqué (2015), that summarized the main points of educational planning at the Ministerial Summit of the European Higher Education Area, stated in part: “student-

**Table 1. Comparison of conventional instruction and student-centered learning**

<table>
<thead>
<tr>
<th>Conventional Instruction</th>
<th>Student Center Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students as passive recipients of information</td>
<td>1. Helping students become active processors of information</td>
</tr>
<tr>
<td>2. Teaching what to think</td>
<td>2. Showing students how to think</td>
</tr>
<tr>
<td>3. Competition for grades</td>
<td>3. Cooperation in learning activities</td>
</tr>
<tr>
<td>4. Lecture and note-taking</td>
<td>4. Active learning with activities that allow for comparison of ideas questions and reinforce inquisitiveness</td>
</tr>
<tr>
<td>5. Teaching for memorizing, recognition or reproduction</td>
<td>5. Support for self-regulated learning</td>
</tr>
</tbody>
</table>
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