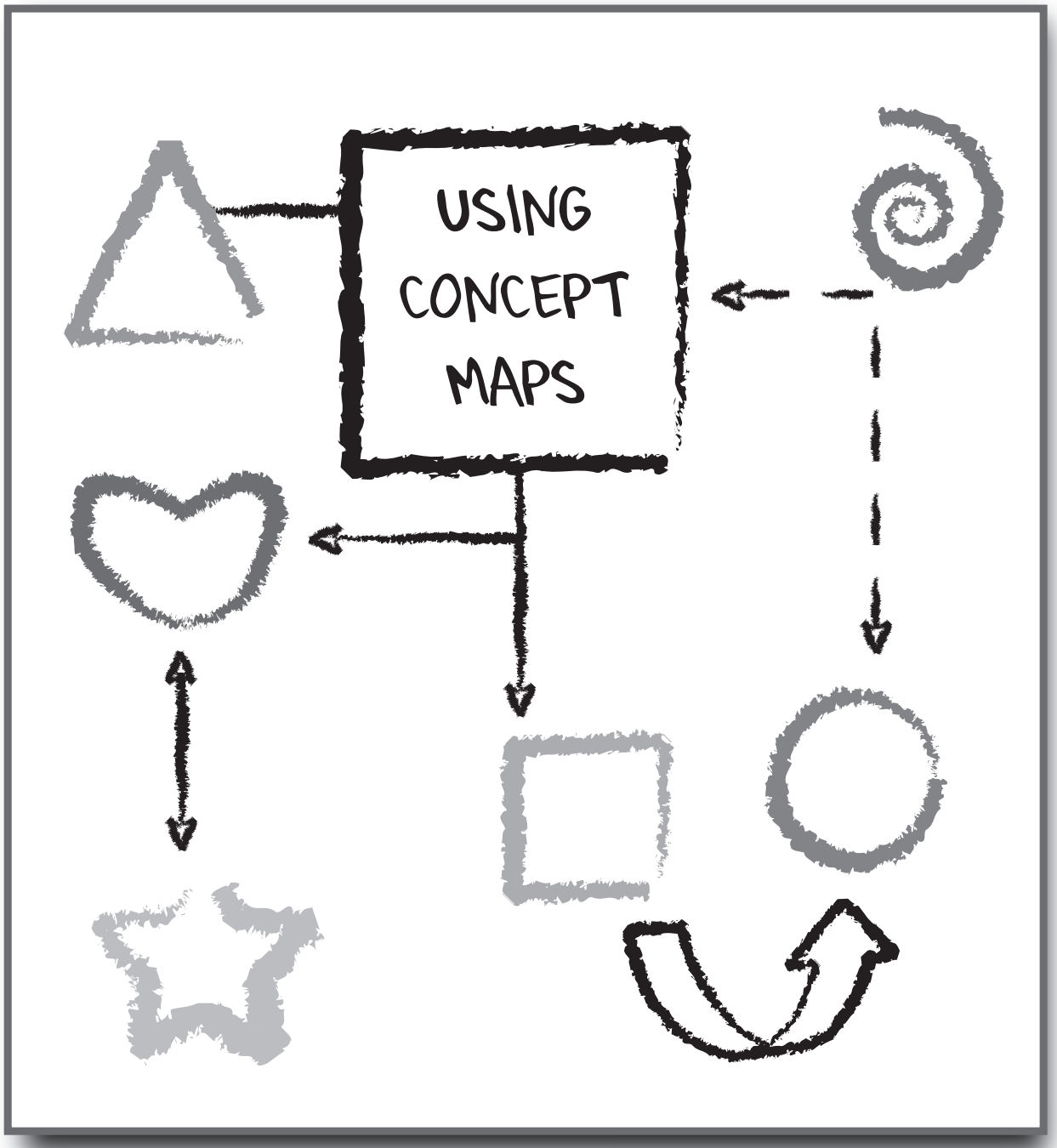
Teaching Nursing



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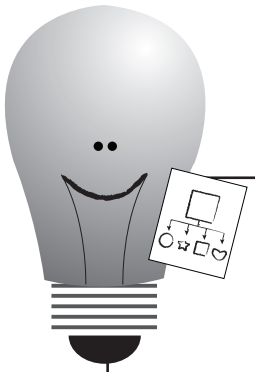

Chapter 4

Teaching Students to Develop Concept Maps

Nursing students are a very diverse group. They range in age from 18 to 75. Because of the current popularity of concept mapping in elementary and high school, many younger students have concept mapping skills when they enter nursing school. Older students, however, may have attended primary school long before the introduction of concept maps; therefore, many students will not have this skill. Consequently, it is important for teachers to help all students learn the concept mapping process.

This chapter focuses on the task of teaching students how to develop concept maps. When teaching students how to develop concept maps, other faculty who are not familiar with the process may be invited to visit class while students are learning the process so they, too, will understand how to develop maps and the importance of this tool for meaningful learning.

A Theoretical Basis for the Process of Teaching Concept Maps

The process of developing a concept map is basically a process of discovering one's knowledge framework and showing how concepts in that framework are related to each other and to new learning. The basis for this process lies in cognitive learning theory (Ausubel, 1978; Caputi, 2004; Vandeveer & Norton, 2005). Teaching students how to build a concept map means teaching them to look at a particular topic of interest and all its related factors and then consciously articulating how those factors relate. This process requires looking at the complete situation, or, in other words, looking at the bigger picture. Many people do not analyze or consider how they relate concepts. They merely move through their daily lives making decisions and carrying out actions without consciously considering what factors impact those decisions and actions.

Students already use this relational process but may not be consciously aware that they are doing so. They merely know that one factor in their life leads to another. For example, when they are hungry, they eat; or, when they see a delicious food, they eat it even if they aren't hungry. Many people do not give much thought to the cognitive process involved when deciding when to eat or what to eat.

This process of collecting all the related factors about a topic and demonstrating how these fac-

tors connect (subsequently leading to a decision about what action to take in a given situation) is what needs to be taught. The approach to teaching this process can be the same approach used to teach new information. Learning new information about an item of interest means putting that new information into an existing cognitive structure and determining how it relates to what is already known. Teaching students the process of concept mapping can take the same approach; that is, ask students to consider a topic with which they are very familiar and then have them reflect on how they think about that topic. To teach students the process of concept mapping, therefore, students are asked to relate factors (sub-concepts) about a concept with which they are very familiar. Then they list all the related factors, connect these factors to the main concept, and identify how these factors relate to the main concept and to each other.

When learning this process, students are learning to think about their thinking. This is a crucial aspect of learning critical thinking. Paul and Elder (2001) state that critical thinking involves thinking about your thinking while you are thinking. This is what you are asking students to do when developing a concept map. All of this forms a strong basis for developing critical thinking.

It would be extremely helpful if this process were taught prior to entering the first nursing course. If your nursing program requires a pre-nursing course or a pre-nursing seminar, it can serve as the ideal time to begin instruction about the basics of developing a concept map. If a pre-nursing course is not required, the process should be taught in the early weeks of the first nursing course.

Building on How Your Students Learn

When teaching students about the process of concept mapping, it may be helpful to explain the purpose of the concept mapping strategy. The purpose is to provide meaningful learning that links new information to what they already know. Or, in the case of learning totally new information, concept maps help students use new learning to build a new knowledge framework that will be expanded as more is learned about the topic.

This kind of learning may be quite different from what students have previously experienced. Ask students how they learn new material. Have them explain what they do. As they share how they learn, take note of their learning processes. Are they describing learning strategies that use rote memorization of information, such as constructing flash cards? Or, do they build charts to compare and contrast information? An interesting question is to ask students if they rely on memorizing the material. Learning about how your particular population of students learns provides insights for developing strategies for helping them learn in a more meaningful way, or to build on what they may be doing already.

After students share their study techniques, introduce them to the idea of using concept maps to learn nursing content. Explain to students that concept maps provide a mechanism for meaningful learning, not simply rote memorization. Explain how meaningful learning is beneficial for a deeper understanding of content, for developing concept mapping skills, and for long-term retention and recall.

Student Buy-In

It is important for teachers to realize this kind of learning may be perceived as additional work and students may resist. Students benefit most when teachers explain the significance of this type of learning and how it impacts retention and recall of information needed when caring for patients. Teachers can also help students with this process by role modeling concept map development when teaching. Students are now ready to develop their first concept map.

Teaching Concept Mapping Using a Familiar Topic

Students will first develop a concept map based on a familiar topic. This approach encourages students to focus on the process rather than the content. Since everyone eats, let's return to the example of eating. Ask students to use the concept of eating for the main concept. Then ask them to list everything they would consider when thinking about eating. This list will vary depending on the students' individual thoughts about eating. After they have listed all the factors or sub-concepts about eating, instruct them to group factors together into categories that share a common feature. Table 4.1 presents the main concept of eating, information that may be used to group factors in categories, and factors that relate to each category.

After students have developed their list of factors or sub-concepts about eating, and grouped

Type of food	Hungry for what?
	Nutritionally best?
	Type of food available
	Dietary restrictions: • Religious • Medical
Time of day	Meal time?
	Snack time?
Thoughts on weight	Want to lose?
	Want to gain?
	Want to maintain?
Time available to eat	In a hurry?
	Time to sit?
Reason for eating	Hungry
	Not hungry, but food sounds/looks good.

Table 4.1 – Factors Related to Eating

them relative to a common theme, they are ready to develop their first concept map. To teach one way of developing a concept map, instruct students to draw a circle in the middle of a piece of paper. Draw lines to the circle, connecting the sub-concepts. On each of the connecting lines, write a few words to articulate the relationship between the main concept and the sub-concepts. After the sub-concepts are connected to the main concept, determine what relationships exist among sub-concepts. Draw lines between sub-concepts. On each of the connecting lines, write a few words that articulate the relationship between sub-concepts. Figure 4.1 presents a map about the main concept, eating, using the factors or sub-concepts in Table 4.1.

Figure 4.1 is one person's knowledge framework as it relates to eating. All people have their

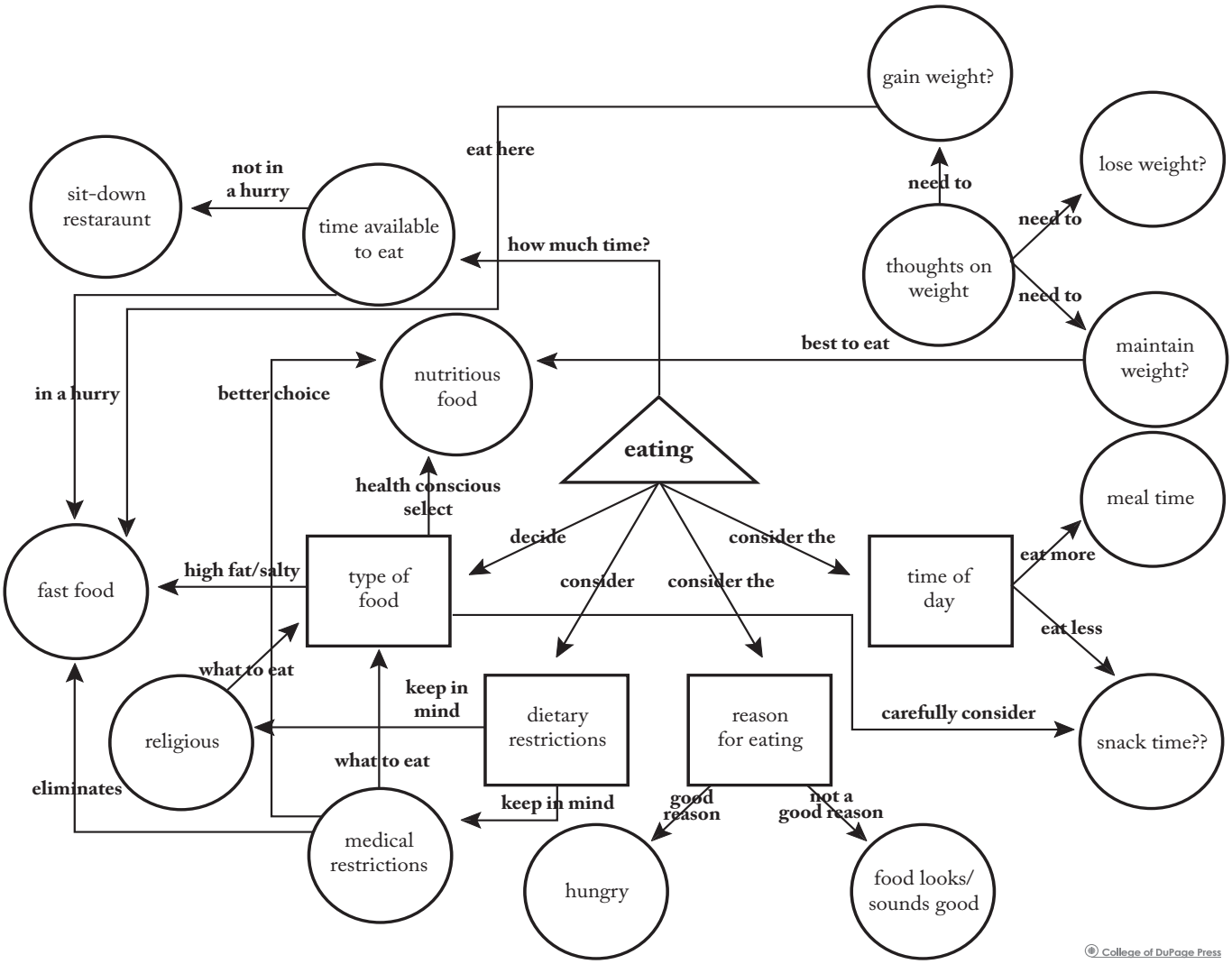

Figure 4.1 – Concept Map on Eating

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own unique knowledge framework about eating and about any topic. After students have developed their individual concept maps on eating, ask students to share their maps with each other to compare how they may be alike and how they may be different. It is very important in learning this process for students to explain the relationships they made and the words they use to explain the relationships between and among levels of concepts.

Note that three different shapes are used on the concept map in Figure 4.1. The main concept uses a triangle, major sub-concepts use a rectangle, and finer discriminations of sub-concepts use a circle. The selection of shapes is the choice of the creator of the concept map. It is important that these shapes are used consistently within the concept map. A consistent use of shapes to represent specific categories of data renders organization of the map more visually apparent.

The main concept and sub-concepts in Figure 4.1 are represented with geometric shapes. Students can add colors to give meaning to the shapes. As concept maps increase in complexity, the meanings of the shapes and colors can be clarified by providing a key in the corner of the concept map to indicate their significance. For example, Figure 4.2 presents shapes that can be used when constructing a patient care concept map. This listing of symbols and labels represents a key that communicates the meaning of the shapes used on the concept map.

As students develop their concept maps they connect the main concept with the sub-concepts.

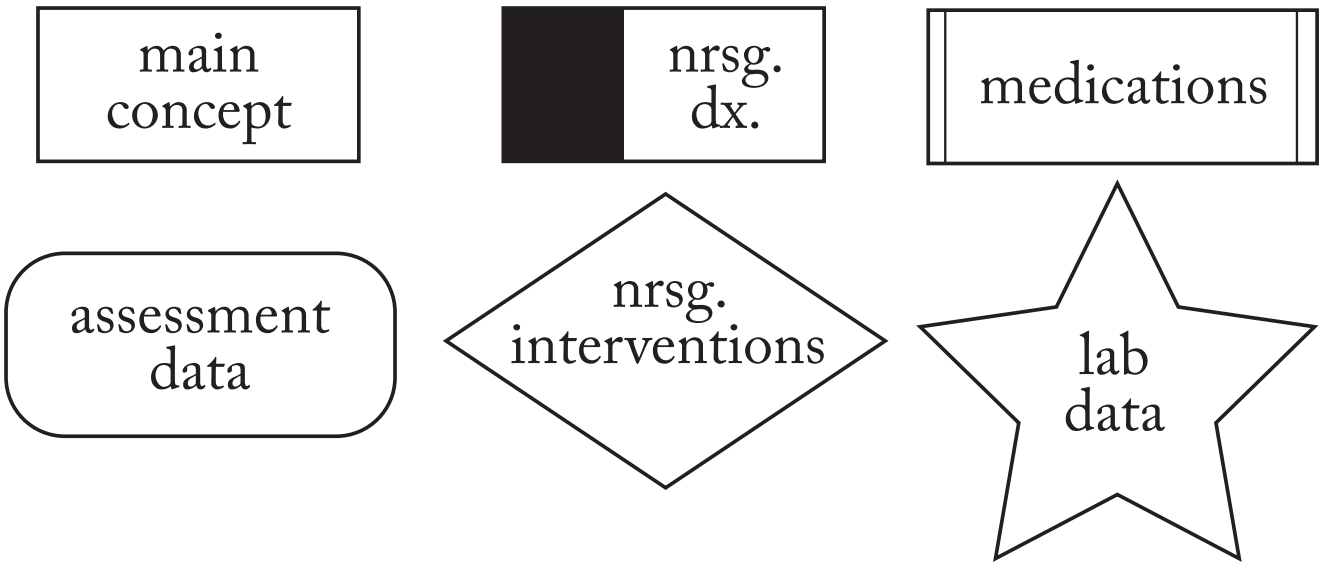

Figure 4.2 – Shapes Designating Concepts and Sub-concepts

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