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Abstract

A theoretical approach to the design and implementation of a web-enhanced course template for Introduction to Psychology is reviewed. Links between psychological constructs and pedagogical principles of learning that are pertinent to a web-based course and the self-determination theory literature are discussed in relation to the design and implementation of a web-enhanced template. The authors propose an approach that describes course design and instructional strategies that, irrespective of the discipline taught, any faculty can use in their own course design. The authors hope that this organizational framework assists faculty in the design and development of a web-enhanced course and implementation of psychologically and theoretically based principles in teaching and learning.

Keywords

course design, web-enhanced course template, self-determination theory, Introduction to Psychology course

Over the past several years, the development of digital processing and communication along with networked computing has created many innovative teaching and learning opportunities. These developments have emphasized interaction and concept exploration and have allowed faculty members to integrate technology with teaching strategies. Empirical evidence related to the use of technology in the classroom is fairly recent, and little addresses the design and development of a course template in facilitating the use of technology in the classroom. The term *web enhanced* has been used to describe a wide range of course delivery mechanisms and audiences, so for the purpose of this article, we use *web enhanced* to define a face-to-face and traditional classroom or a hybrid and blended classroom that uses a learning platform (e.g., Blackboard Vista) with online supplements.

Although some faculty members experiment with technology and the web with enthusiasm and incorporate innovative instructional tools in their courses, others face technological difficulties and time constraints. Faculty members have limited time, energy, and technological experience. Prendergast (2000) said,

Not many people undertaking mountaineering for the first time would attempt to climb Everest on the first day. Yet many educators acquire some conferencing software and then try and design and run some kind of pilot online course. When their experiment fails, they rarely blame themselves, often stating that the medium is not very suitable for learning. (p. 294)

Goal and Benefits of Creating a Web-Enhanced Course Template

One of the main goals and benefits of creating a course template is to provide instructors with a simple mechanism to augment traditional teaching using technology. A further goal and potential benefit to the educational institution is to provide a “best practices” template for web-enhanced delivery and course design that will lower cost and effort related to future course development and web-enhanced training.

The proposed course template was primarily designed to follow the authors’ institution of higher learning’s criteria for web-enhanced courses and provide a unique menu of options for instructors to use in creating a well-organized, theoretically based, high-quality course. Increasing the number of instructors using technology in their Introduction to Psychology courses would improve student preparation for future distance education and blended courses, which is of benefit to students and instructors alike. Getting first-year undergraduate students to study using a web-enhanced course and technology will promote self-directed learning opportunities and independent work and enhance interaction among students and instructors

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asynchronously. Moreover, the creation of a template allows all instructors assigned to teach the course to use it, thereby increasing the number of web-enhanced courses taught within the institution. Such a template provides instructors, whether seasoned online veterans or those new to web-enhanced course delivery, access to a well-designed, high-quality website focusing on excellent material presentation, creative development of a learner's community, and adherence to the discipline goals and university mission.

Template Course Design

The course template alleviates some of the limitations related to the use of e-packs in that three of the most popularly used texts at the institution were used to develop the template. The website contains a menu of options, which can be selected from to personalize the course. The course template houses sample syllabi, formatted test banks for online examinations, group activities and other assignments, discussion topics for each chapter, a statement of the Institution Psychology program goals and learning objectives and the American Psychological Association program goals and learning objectives, and generic course content (e.g., links to chapter outlines and PowerPoint slides for the texts used to design the course, streamed media files, additional selected readings, links to course-related websites, and other features). The course template can be used in a variety of ways: to enhance a face-to-face course, as the online component of a hybrid course, or for distance education delivery.

Pedagogy and Course Design

When encouraged to use the web to enhance their courses, most professors are concerned first with how to translate the course content from face-to-face to a web-enhanced format and how to best use the web and technological tools to enhance the course. However, few faculty members who are willing to use technology in the classroom are similarly proficient in instructional design and the various theories of student learning and use of technology. Instructional design and theories of student learning purport that learning is not simply the dissemination of material but also the creation of a learning environment that supports student success. In this article, the self-determination theory is used to underpin the development of the Introduction to Psychology course template. A discussion of how the template taps self-determination theory follows.

Theoretical Background

Self-Determination Theory and Learner Motivation

Self-determination theory (SDT) posits that a student's level of self-determination is determined by the satisfaction of three innate psychological needs: autonomy, competence, and relatedness. Autonomy refers to being the source of one's own behavior and achieving congruence between the activity and one's integrated sense of self. Competence refers to the need

to have an effect on the environment and to achieve desired outcomes, and relatedness is the desire to feel connected to valued others (Ryan & Deci, 2002). Promoting autonomy, competence, and relatedness in the classroom, regardless of course delivery, is essential as empirical research has linked satisfaction of these needs to adaptive consequences, such as higher concentration in class (Standage, Duda, & Ntoumanis, 2005) and effort (Ntoumanis, 2001). The more SDT needs are satisfied, the greater the level of one's own self-determination and motivation. Self-determined students are more motivated to engage in and complete tasks; thus, student motivation is a key component to better predicting student success. Graham and Weiner (1996) describe the study of motivation as "the study of why people think and behave as they do" (p. 63). They continue by explaining,

In the context of academic achievement, motivational concerns would be addressed if we were to ask, for example, why some students complete tasks despite enormous difficulty, while others give up at the slightest provocation, or why some students set unrealistically high goals for themselves that failure is bound to occur. (p. 63)

The following sections describe the components of SDT and student motivation that are related to web-enhanced course design and student success (i.e., motivation to learn, feeling competent, academic performance, course completion, and persistence in school).

Students and their need for autonomy. A current approach in dealing with enhancing students' motivation is to enhance their feeling of autonomy. According to cognition evaluation theory (CET), a subtheory of SDT, an individual is driven to satisfy his or her need for autonomy, competence, and relatedness (Deci & Ryan, 1985, 1987). CET makes an important distinction between autonomous or self-determined behaviors and controlled behaviors. Autonomous behaviors are those that are self-initiated and regulated by one's choice, whereas controlled behaviors are those that are pressured and coerced by either internal or external forces, so they do not reflect one's true choice (Deci & Ryan, 1985). The need for autonomy includes one's inherent need to feel free and choiceful when considering or performing an activity rather than feeling controlled or coerced to think, feel or behave in specific ways (Deci & Ryan, 1985, p. 95). Individuals may thus experience the self (the vital core of a person) as the agent (i.e., "the locus of causality") of the behavior or perceive external factors (i.e., "my parents require that I do well in school") or internal factors (e.g., "I would feel guilty if I were not a good student") as controlling their behavior. These needs, thoughts, and feelings can either be internalized or occur out of a sense of obligation. For example, a college student who usually studies several hours a day to maintain a high A may be internally motivated but will not be autonomous if the behavior is driven by a relentless sense of pressure to be a perfect student or to please a parent or professor.

Students and their need for autonomy support. Another way to foster students' sense of autonomy is to provide them with autonomy support in the educational setting. A meta-analytic review of the literature (Reeve, Jang, Carrell, Jeon, & Barch, 2004) indicates that "students with autonomy-supportive teachers compared to students with relatively controlling teachers, show greater mastery motivation, perceived competence and intrinsic motivation, greater conceptual understanding, higher academic performance, and greater persistence in school" (p. 149). Considering autonomy support as a way to enhance motivation is one of the major aspects of SDT (Vallerand, 1997). Providing students with autonomy support allows them to make certain choices and decisions about their learning experience (Vallerand, 1997). In turn, having choices and being able to make decisions increase students' self-determined motivation and help them develop high levels of intrinsic motivation and identification (Deci & Ryan, 1985). On the other hand, controlling students' behaviors by telling them what to do and how to do it without acknowledging their feelings, choices, or orientation may weaken their motivation (Deci & Ryan, 1985). Considerable evidence supports the idea of autonomy. For instance, research indicates that controlling teachers have a negative influence on students and decrease their intrinsic motivation toward school (Ryan & Grolnick, 1986). Any action that controls or restrains a student's behaviors will lead to negative affect and result in lowering the student's motivation. Conversely, teachers who acknowledge students' perspectives, provide rationales for assignments, enhance students' feelings of volition, and promote perceived internal locus of control have been found to increase students' intrinsic motivation (Ntoumanis, 2005).

Autonomy-supportive professors will hold and communicate high standards, set limits, and provide feedback. Although setting limits and providing feedback enhance motivation, these actions need to be done in an encouraging, nonjudgmental style and in autonomous-supportive manners; that is, professors need to provide choices to students and allow them to make decisions that will satisfy their need for autonomy.

Students and their need for competence. The need for competence refers to students' need to feel capable of mastering challenges and to effectively interact with the environment (Deci & Ryan, 1985). Perceptions of competence are critical because they facilitate goal attainment and provide individuals with a sense of satisfaction when engaging in an activity at which they feel successful. Feeling able to master difficult challenges leads individuals to feel efficient and to experience greater levels of intrinsic motivation (Deci & Ryan, 1985; Harackiewicz & Larson, 1986; Harter & Jackson, 1992). The need for competence is similar to Bandura's (1986) theory of self-efficacy and to behavioral control (Ajzen & Fishbein, 1980). Student perceptions of being self-efficacious and able to accomplish a task (Bandura, 1986) have been found to affect effort and achievement (Salomon, 1983, 1984).

The perceived effort expenditure in completing a task is also related to perceived competence and motivation (Paas,

Touvenin, van Merriënboer, & Darabi, 2005). Task characteristics such as task difficulty, perceived importance, usefulness, and value of engaging in the task have been identified as important variables affecting student motivation. If perceived competence is low and effort expenditure is perceived to be high, learners will not be motivated to exert sufficient effort. Previous learning experiences shape a student's sense of competence and perceived effort expenditure. These past experiences will determine how a learner perceives a given task and the amount of effort required to perform the task successfully. Creating a learning environment that builds student self-efficacy will in turn help them develop a sense of competence and increase their motivation; surprisingly, self-efficacious students will underestimate the level of effort necessary to complete a task.

Students and their need for relatedness. Relatedness is an essential, lifelong human need and refers to one's need to feel close to people who are important to them (Sheldon, Joiner, & Williams, 2003). This idea of relatedness has received support for a long time. Harlow (1958) believed that individuals need to experience love and interpersonal contact to develop optimally; they also need to experience warmth and know that others care about them. The desire for meaningful contact with others and the sense of belonging within a specific social context are essential for well-being (Kowal & Fortier, 1999) and to stimulate goal-directed activity (Baumeister & Leary, 1995). Perceptions of relatedness are viewed as the vehicle between value transmission and social relationships. In other words, individuals are more likely to adopt the beliefs and values held by certain individuals and groups that they respect (Vallerand, 1997). SDT research has also examined teaching strategies that promote feelings of relatedness. For example, Connell and Wellborn (1991) suggest that feelings of relatedness can be facilitated through the use of involvement strategies, which they define as the degree of interest and emotional support shown by the teacher to the student.

Types of motivation. SDT theorizes that a continuum of different types of motivation exists, depending on the level of self-determination that an individual possesses (Taylor & Ntoumanis, 2007). The highest level of self-determined regulation is intrinsic motivation, which involves pursuing an activity for its own sake because it is interesting and enjoyable. Extrinsic motivation refers to the pursuit of an activity to attain an outcome separate from the activity itself. Extrinsic motivation can be further divided in a descending order of self-determination into integrated (i.e., a student participates in activity because it is a part of his or her self-identity), identified (i.e., a student participates in an activity because of the benefits of participation), introjected (i.e., a student participates in an activity because failure to participate would cause feelings of guilt), and external (i.e., a student participates because he or she is forced to participate). Finally, amotivation refers to a lack of either intrinsic or extrinsic motivation to participate in an activity. Amotivated students lack self-determination.

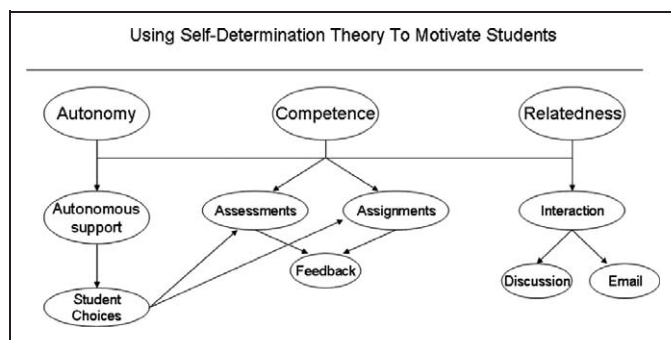


Figure 1. Using self-determination theory in creating a web-enhanced course

Faculty approaches in the classroom and course design play a key role in influencing students’ desire to make initial and persistent efforts in classes (McCombs, 1991; Sass, 1989; Stipek, 1988, 1996). Using technology to web enhance a course allows professors to use the classroom environment differently relative to the traditional face-to-face classroom. Professors are freed up to use the classroom to expand on web activities and develop activities that focus on increasing students’ learning of difficult concepts and facilitating students’ learning. Wolters and Pintrich (1998) add that “activities students participate in can have an important impact on students’ motivation and level of self-regulated learning in the classroom” (p. 29). Similarly, Frankola (2002) identified motivation as an especially critical dimension that determines student learning success but causes high drop-out rates among online learners. Generally, empirical evidence focusing on learning and motivation indicates that teachers’ motivating or nonmotivating behaviors are partially responsible for differences in initiation and persistence of goal-directed behaviors in students. Furthermore, students taught by motivated teachers reported higher motivation than those taught by less motivated teachers (Atkinson, 2000).

Interactions among autonomy, competence, relatedness, and student motivation. The aforementioned innate SDT needs do not function in isolation but rather are interrelated to one another and in combination affect self-determination and motivation. Factors facilitating satisfaction of autonomy, competence, and relatedness encourage individuals to engage in activities in which these perceptions are experienced (Vallerand, 1997). For example, social factors such as providing instructional feedback can facilitate perceptions of competence, autonomy, and relatedness and result in greater motivation (Vallerand, Fortier, & Guay, 1997). Research reveals several educational outcomes, such as effort, positive emotions experienced in the classroom, psychological adjustment at school, quality of conceptual learning, greater concentration, satisfaction with one’s academic life, school performance, and intentions to persist in school (Fortier, Vallerand, & Guay, 1995; Gottfried, 1985, 1990; Grolnick & Ryan, 1987; Harter & Connell, 1984).

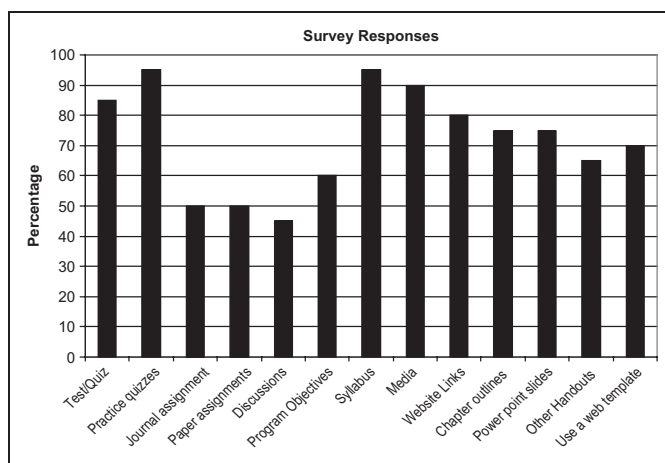


Figure 2. Faculty survey responses regarding tool usage

A great deal of research, mostly based in North America (Grolnick, Ryan, & Deci, 1991; Harter & Connell, 1984; Ryan & Grolnick, 1986; Vallerand, 1997), reveals positive relations between autonomy support from parents and teachers and students’ intrinsic and autonomous self-motivation in school, their self-esteem, and their perceived competence. These findings have been obtained at all levels of schooling including elementary (e.g., Grolnick & Ryan, 1987), high school (e.g., Vallerand et al., 1997), and postgraduate education (Williams & Deci, 1997), facilitating young adolescents’ motivation (Grolnick, Farkas, Sohmer, Michaels, & Valsiner, 2007).

Only a few articles have examined instructional strategies in a web-enhanced environment (Romiszowski & Mason, 1996). In addition, little research has proposed reviewing the link between applicable psychological constructs and applied instructional practice and the use of these data in developing a web-based course. Most of the research regarding instructional strategies has mostly focused on online education, yet little research includes SDT and instructional design of a web-enhanced course, and little focuses on improving student motivation. The current course template was designed to increase students’ self-determined behaviors and consequently improve students’ completion rates for tasks and enhance overall student success.

Self-Determination Theory and Web-Enhanced Course Template Design

Using SDT as a guide, we developed a web-enhanced template to facilitate the use of technology in the classroom as well as provide a stepping stone for faculty to enhance a face-to-face course, to develop a hybrid or blended course or an instructional television course, and to create a fully online course.

Although SDT was the basis of our instructional design, the learning objectives stated by the American Psychological Association (APA) and the institution’s psychology discipline guided the course template design. It was our intent to link all

content, assignments, assessments, and activities to the course learning outcomes, the university program objectives, and the APA learning outcomes. We wanted faculty to be able to inform students why they were assigned certain reading assignments or tasks and how these fit into the larger framework of the disciplinary goals and objectives. In the creation of a “best practices” course, we felt it was essential to frame the course with assessment in mind. Therefore, each learning outcome is linked to at least one course activity.

In developing the course template, we contemplated how to select the course content that would be presented on the teaching platform. Three commonly used texts were selected for the development of the course. The content was condensed and presented in a generic format that could be used with any Introduction to Psychology text. Next, we questioned how to best organize the information on the teaching platform or learning management system so that it would be easy for faculty to implement and for students to navigate. We opted to create learning modules for each chapter to house the course content and link all learning outcomes, assignments, discussions, media, and assessments directly to the chapter content.

Development of the template resulted from a questionnaire we designed to survey the psychology instructors about their technology interests and needs for instruction. The results served to help us better understand instructors’ needs and incorporate their feedback into our template. The items that were rated most positively were questions relating to being able to test online, having online media such as video clips and voice-over lectures, and being able to post the syllabus and course content online. Instructors’ feedback was valuable and helped us design the course template to address their needs.

The following tools were selected for use in the current course template: practice quizzes, online assessments, paper topics and written journal assignments, discussion posts, goals and learning objectives, learning modules that house chapter outlines, summaries, handouts, and PowerPoint slides, the mailbox function, the syllabus, and web links.

Course Design and Student Autonomy

As mentioned earlier, perceptions of autonomy support involve the experience of volition and choice; whereas feeling controlled involves the experience of being pressured or compelled to do something. Thus, instructors focusing on enhancing an autonomy-supportive learning environment allow opportunities for choice and self-initiation and more importantly provide a meaningful basis for constraining choices (e.g., choice between two types of assignments), avoid pressure and controlling language (e.g., using words such as have to or should), and provide timely instructional feedback (Deci, Eghrari, Patrick, & Leone, 1994). A well-designed web-enhanced course needs to engage students by allowing them choices while making them feel connected and competent. Yet it may be easier for most instructors to structure the web-enhanced learning environment to pressure students to engage in specific activities and to complete assignments

during a specific time period. Such controlled environments may be easier for instructors to maintain, but such controlling behaviors will hurt students’ motivation. This is particularly important to consider when designing a new learning environment because the more autonomy supportive the social context, the more it promotes intrinsic motivation, persistence in learning, and enjoyment.

The course template we designed provides instructors with the opportunity to allow students to review various activities for each chapter. For example, the content module is organized in the following manner: First, the chapter learning objectives are articulated and linked to the chapter activities; second, the chapter summary and outline are provided for students highlighting key terms and important content; third, the PowerPoint slides are included for a visual learning aid; fourth, several graded assignments, from which students can select to participate in, are listed; fifth, several discussion topics are provided for students’ selection; sixth, a series of media are presented to aid in student learning; and seventh, a chapter assessment, which students can complete multiple times as practice for their exams, is provided. By providing students with a list of alternatives, they are able to select one assignment, select one discussion, choose whether or not to view the media clips, and choose whether or not to take the practice quizzes. Making choices available to students helps build a sense of autonomy. Each instructor can also choose to limit the number of selections but should provide at least two choices. A recent study (Black & Deci, 2000) found that a high level of self-determination led to high levels of perceived competence, interest, and enjoyment, less anxiety, and, more importantly, lower course drop-out rates. From the list of assignments, discussion topics, and media, students are sure to find content that fits their interests and personal knowledge, whereas faculty are able to present several graded activities from each chapter.

In addition to providing students with alternatives for learning activities, the web-enhanced course design provides students with additional autonomy in that the course material is conveniently accessible. Activities are facilitated through asynchronous learning tools. Some of those tools are computer-mediated communication tools such as email, a listserv, discussion boards, and other tools that promote collaboration and communication. Oakley (2000, p. 1) describes such asynchronous learning tools as “a distributed community of learners who, by having access to a computer network could communicate with each other and access learning materials at any time and from any place.” Being able to access learning material whenever and wherever enhances one’s autonomy, which then results in greater mastery of course content, greater perceived competence and intrinsic motivation, greater conceptual understanding, higher academic performance, and a higher level of persistence in school (Reeve, Deci, & Ryan, 2004).

Designing a course template to increase students’ perceived competence. Perceived effort expenditure is related to perceived competence and consequently student motivation. Each task

assigned in the course template is linked to the course learning outcomes. Students are made fully aware that each activity is an integrative part of mastering the course goals. Building a course focused on assessment provides students with clear expectations and aids in their comprehension of how each assignment fits into the larger framework of understanding psychological concepts and principles, thus increasing the value of engaging in and completing the assigned activities.

Feedback is also essential in building a student's sense of competence. Feedback in the course template is provided by various players: faculty feedback on performance, feedback provided by computer scored exams, feedback provided by students through asynchronous communication, and self-appraisals of understanding and performance. According to Wiggins (1990), assessments should not only provide a grade but be educative as well. To accomplish this, we included weekly practice quizzes consisting of 10 randomly selected items that students could take multiple times. Quiz questions were handpicked to assess the learning outcomes for each chapter. By having been provided the opportunity to complete the practice quizzes multiple times, students are able to witness an improvement of their skills with increased effort.

Other assessments consist of faculty members providing feedback on journals, free writes, discussion topics, and short essays using a rubric that provides students with a clear understanding of expected criteria and standards. The rubric is devised to provide an opportunity for students to self-assess their own performance before submitting their work for grading. Students are also encouraged to provide one another with feedback on their ideas. Guidelines for student-provided feedback are included in the syllabus. Students are encouraged to challenge one another's ideas in a supportive and respectful manner, never demeaning one another's experiences or beliefs. Feedback on performance should be provided in a timely manner and allow students the opportunity to improve their work before the final day to submit activities.

Self-evaluation via weekly quizzes provides opportunities for students to reflect on what they know and allows them to critically examine their learning skills. This type of evaluation also increases their sense of competence and motivates them to master subsequent chapters. The self-evaluation process contributes to students' goal-setting and increases their perception of self-efficacy and motivation with regard to class requirements (Bandura & Schunk, 1981).

With opportunities to self-assess, to receive timely, encouraging feedback, to retest, and to be provided with clearly articulated guidelines, students feel competent and thus experience greater levels of intrinsic motivation (Deci & Ryan, 1985).

Designing a course template to increase student relatedness. According to self-determination, a sense of relatedness is an important component of motivation, and thus focusing on social activities in the course helps build a sense of community. Creating social experiences using the discussion board brings students into a world in which they can safely share

information and engage in discussion and reflection. Henri (1992) proposed that social interaction contributes to social cohesion and a feeling of belonging, which are in line with SDT.

Moreover, Bannan-Ritland, Bragg, and Collins (n.d.) discuss the value and effectiveness of asynchronous discussion as it allows students to interact with others over distance and time. Such interaction is electronically structured in that students can maintain a dialogue regardless of their location (e.g., the same school or across an ocean) or time. Well-structured discussions allow students to not only share viewpoints but also work together to accomplish the same goal, to respect different perspectives, values, and beliefs, to support each other, and to write for an audience as their classmates evaluate their ideas and language proficiency. Some professors focus on free writes versus more structured discussions. Both types of writing present advantages and disadvantages. With free writes, professors have to monitor discussions more carefully and intervene if students drift too far away from the main topic, and their contributions become irrelevant (Romiszowski & Mason, 2004, p. 399).

Our course template focuses on creating a community of learners by using asynchronous discourse. This method of learning creates opportunities for students to engage in a dialogue with others (classmates and instructor) to "learn, collaborate, reflect, debate, critique, expound, share, give feedback, question, answer, and various other communicative behaviors" (Bannan-Ritland et al., n.d.). We provide faculty and students with both structured and unstructured discussion opportunities for each chapter in the text. Students have the opportunity to select which discussion topic to expound on based on their personal interests and experiences. Faculty and students are provided with a grading rubric for the discussion topics. This allows students to self-examine the quality of their post, allows faculty to appropriately apply a grading standard to diverse discussion topics, and allows students to assess the work of their classmates. Blackboard Vista allows students to evaluate one another's work and to affect the grade they receive for their discussion posts. The topics were designed to create an experience in which students have to solve problems, make decisions, and explore websites related to the pertinent material and finally reflect on the meaning of the material presented.

Discussion

According to SDT, intrinsic motivation occurs when one does something because the behavior is inherently interesting and/or enjoyable. Therefore, designing a classroom environment that enhances intrinsic motivation results in quality learning and feelings of competence and relatedness (e.g., "I want to learn, I feel I can, and my teacher cares about my learning"). Students feel autonomous when they feel supported to explore (e.g., having choices), take the initiative (e.g., meet class requirements based on their interests), and develop

and implement solutions they can apply to their lives. Students feel competent when they receive instructional feedback they can use to improve their performance. For instance, using a grading rubric allows students to identify their weaknesses and to improve based on the rubric criteria. Last, students feel related when they perceive that others care about them and listen and respond to them, which can be easily achieved in a web-enhanced learning environment using discussion boards, chats, and email.

In developing the current course template, we attempted to move beyond the idea of using a web-enhanced course as a vehicle for delivering content and instead attempted to create a learning environment that would motivate students to actively engage with the content and support their own development and mastery of the course content. From our understanding of SDT, we saw interaction as a critical part of the learning experience with authentic tasks that support students' autonomy and increase their sense of competence. We accomplished that through a fundamental reconceptualization of the role of faculty, the role of students as participants, and the role of technology. We allowed the course content and activities to be defined by the learning outcomes, delivered with the use of technology, and taught through dialogue, interaction, mentoring, and coaching provided by both students and faculty alike. This course template can as easily be used in the face-to-face classroom as in a hybrid or blended environment. When used with a face-to-face or hybrid classroom, the instructor will select how to use the technology. For instance, instructors can use the teaching platform to strengthen classroom activities. For instance, asynchronous discussions often bring up unresolved questions, and thus instructors can bring some of those questions into the classroom. Moreover, free writes often reveal interesting ideas (e.g., "I had no idea that others would feel differently") that instructors can expound on. Finally, students' work may show uncertainties that can be clarified.

Researchers have just begun to make connections between principles of learning and implications for developing web-enhanced courses (see Bonk, 2006; Bonk, Wisner, & Lee, 2003; Kim, Bonk, & Zeng, 2006). A direct link between established psychological constructs and theoretical principles may prompt instructors to evaluate and use a web-enhanced environment to enhance student-centered learning. Using such an approach will lead faculty to consider and include grounded instructional theories and strategies to support web-enhanced courses. Mason (1994) suggests that technology is not the crux of the problem; rather, identifying the most effective psychological and pedagogical strategies represents the core of a successful computer-mediated learning environment.

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