Students' perceptions of creative teaching and facilitation techniques in asynchronous online courses

Natalia Matusevscaia

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By: Natalia Matusevscaia

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Chair's name

Robert M. Bernard, Ph. D.

_____ Examiner

Examiner's name

Saul Carliner, Ph. D.

_____ Examiner

Examiner's name

Richard Schmid, Ph. D.

_____ Supervisor

Supervisor's name

Approved by _____

Chair of Department or Graduate Program Director

_____ 2016 _____

Dean of Faculty

ABSTRACT

On the students' perceptions of creative teaching and facilitation techniques in asynchronous online courses

Natalia Matusevscaia

With the development of educational technology, undergraduate students are presented with the opportunities to enroll in online university courses. The students recognize the advantages of studying from the comfort of the place of their choice and at their own productive time. However, online students may feel their interest and desire to study online decreases over time. Researchers argue that the online environment can be a big enabler of teachers' creativity which can be the best solution to motivational issues and dropout. This thesis reports a qualitative case study that explores students' understanding and perception of online teachers' creativity and how it influences their motivation to learn in asynchronous online courses. Concordia's undergraduate students who enrolled in and experienced the *Discover Statistics* course were invited to participate in this study.

Seventeen student participants shared their experience during one online one-on-one interview each and completed the Motivated Strategies for Learning Questionnaire (Pintrich & DeGroof, 1990). The findings identify six main themes: positive experience in the course, negative experience in the course, definition of creativity and creative teaching, creative teaching strategies, positive comparison with other classes and motivational effects. Answering the main question of the research, it was concluded that this course includes multiple creative strategies, such as gamification, authentic examples, different approaches to explanations, repetitive practical problems, and self-assessment among all. These strategies positively affect participants' motivation to learn.

Keywords: teacher's creativity, creative teaching strategies, online teaching strategies, online asynchronous course, undergraduate course, student motivation, qualitative study.

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Chapter 1 – Introduction

Distance learning is represented by two main methods of instruction delivery: synchronous and asynchronous. Synchronous online courses are the ones that require the instructor and the students to be online at the same time. The learning in a synchronous course occurs at a specific scheduled time. Hrastinski (2008) states that synchronous learning, with the help of videoconferencing and chat, can support the development of learning communities because both learners and instructors feel like participants. Asynchronous online courses are the ones that do not require the instructor and the students to be online at the same time. All the materials for the asynchronous courses can be accessed any time, in some cases within a given timeframe. Vonderwell (2003) argues that it is important to use effective ways of message communication in the asynchronous computer environments. The researcher suggests careful construction of collaboration, clarity in writing messages, and careful use of Web technologies for interaction.

Synchronous and asynchronous courses provide very different learning experiences. The two formats of instruction delivery are designed differently. This thesis paper only addresses asynchronous instruction.

The online class invasion?

In their article "The future of online teaching and learning in higher education", Bonk and Kim (2006) introduce readers to the notion of a "perfect e-storm" emphasizing fast and radical changes in the way education is perceived by both instructors and students. The researchers believe the number of online courses is growing and online technology is considered an expanding tool kit for present and future instructors and learners. The participants of Bonk and Kim's (2006) survey (562 in total) describe the trends in the development of educational

technology, and their predictions with their day-to-day teaching experiences. Do the participants' predictions of the increase of learner demands for online programs and the enhancement of online pedagogy become a reality? Allen and Seaman (2014) have been tracking the development of online education in the United States starting from 2002. On one hand, in 2014, their annual report "Grade Change – Tracking Online Education in the United States" showed that "the proportion of institutions that believe that online education is a critical component of their long term strategy" increased over the decade and "the proportion of institutions reporting online education is not critical to their long-term strategy" dropped (p. 3). On the other hand, the growth rate for online class enrollment started to decrease. The tracking shows that the number of students taking at least one online course is still growing but not as fast as it was ten years ago. Hill (2015) reviewed several recent surveys and forecasts on the growth of online learning and came to the conclusion that there has been no rapid growth in the number of university students taking online courses. The slowdown in growth of online learning is noticed in the last two years, which raises questions on the future trends of postsecondary learning. Hill (2015) assumes that "plateau" in online enrollment will be changed if the quality of online courses is addressed.

Issues of the quality of online education raise various questions of pedagogical techniques and learning outcomes. Different online courses create different experiences for students. Online teachers report high dropout numbers that vary from course to course. Levy (2007) defines students dropped out of the online course as students who "voluntarily withdraw from e-learning courses while acquiring financial penalties" (p. 188). Some researches support instructors' reports on high dropout numbers in online learning. For example, a survey conducted by James Madison University in 2003 involved 375 student participants. The results show that

the dropout rate of online courses was 26% in comparison with the dropout rate of face-to-face classes of 3%. Another example is Levy's (2007) study that involved 453 university students and compared dropout rates of online courses and traditional classrooms. The researcher states that the dropout rate of online classes was higher (18%) than the dropout rate of face-to-face courses (8%).

Lee and Choi (2011) reviewed online course dropout research and concluded that 69 factors influence students' decision to quit learning online. These factors can be classified into three categories: student factors, course factors, and environmental factors. Some students drop out of courses because of the atmosphere that neither engages nor motivates to learn in the online class, even though they are interested in the topic, because there is not enough social presence, or because they feel over or under-challenged by overall topic exploration and knowledge assessments. The concept of social presence is one of the most important factors of the effective asynchronous online course (Aragon (2003), Swan and Shih (2005), Tu and McIsaac (2002)). Swan and Shih (2005) define social presence as "the degree to which participants in computer-mediated communication feel affectively connected one to another" (p. 115). The researchers emphasize that a significant relationship exists between perceived social presence and students' satisfaction in asynchronous learning. Aragon (2003) echoes stating that the establishment of social relations within an asynchronous course is one of the means to make students' learning experience enjoyable. For some students from Eom, Wen, and Ashill's (2006) study who experienced asynchronous distance education and who take at least one online course for credit, it is important to be prepared to push themselves to finish the course, because the videos, with static lesson structure and a teacher standing stationary in front of the camera, can be tedious. Some students say that it is very rare for a course to live up to their expectations.

Levy (2004) names student's satisfaction with the online course a key factor in student's decision to continue learning or to drop out. Student satisfaction can depend on multiple factors. Investigating what factors and characteristics of an online course contribute to overall students' satisfaction, Yukselturk and Yildrim (2008) name interaction, course structure, and the quality of instructional support among all. The researchers argue that both quality and quantity of learning interaction affect students' satisfaction. They also highlight the importance of well-structured learning activities and pay special attention to the "use of instructional design and cognitive principles in designing program courses and instructional materials" (p. 62). Paechter, Maier, and Macher (2010) include students' expectations and previous experiences in online courses to the list of factors that influence students' satisfaction. The researchers say that students' achievement goals and instructor's experience and support are the most important course characteristics that affect students' satisfaction. As the result, it is suggested "to influence students' motivation and goals by adapting instruction accordingly" (p. 222).

Having a positive online learning experience, undergraduate students often share the titles of online classes and the names of instructors who are interesting and engaging. These subjective referrals attract other students to the course and help building expectations that match online learning environment. However, instructors alone are not responsible for the creation of online courses. Asynchronous courses are designed by teams and may follow a standard template in which an instructor does not have a lot of flexibility in course structure or activity choice. Course development teams may include instructional designers and production specialists who help designing the course based on instructor's initial approach. The collaboration between an instructor and a course development team is just one part of asynchronous learning delivery. The other part is the facilitation of the course, which refers to the direct interactions with students.

This usually is managed by instructors themselves and TAs who may work under more or less direction of the instructor. The average student perceives an asynchronous course as a single unit, and could attribute both parts, design and development, to the instructor alone. This thesis paper takes into consideration this students' overall perception of an online course.

Definition of terms

Most online courses require sufficient efforts and student self-organization, or the motivation of learners may fall. However, many of the students come across a course that engages and inspires them a lot. What do these courses have that others do not? What do instructors do to motivate their students to recommend their courses? What attracts students to a particular online course? The answers to these questions differ from one researcher to another. Many of the researchers (Clayton, Blumberg, &Auld, 2010; Morrow, 2010; De Sousa, 2007; Jackson, 2006) believe there is one significant aspect which is present in the courses students like - teacher creativity.

Definition of Creativity

Historically, people view creativity as a "mystical" process. It is perceived as a gift of nature given to particular individuals who delight us with their works. This perception has drastically changed. The notion of creativity is difficult to define because of its subjective nature. The Longman dictionary of contemporary English (2006) defines creativity as "the ability to use your imagination to produce new ideas, make things" (p. 368). However, this definition cannot clearly identify and characterize creativity in education.

Several researchers provide their definitions of creativity. Table 1 represents a variety of definitions of creativity in education in chronological order of their appearance in scientific literature.

Table 1: Definitions of creativity

Source	Definition of creativity in education
Amabile, Goldfarb & Brackfield (1984)	"…production of something that is both novel and useful" (p. 6).
Hennessey & Amabile (1987)	"…relies on the consensus of experts: a product or idea is creative to the extent that expert observers agree it is creative" (p. 8).
Trunnell, Evans, Richards &Grosshans (1997)	The participants of the study say that creativity is "the generating of something new and different…or taking something old and giving it a new direction or shaping it in a different way" (p.39)
Donnelly (2004)	"…putting things that are already together in a different way by being generative, innovative, expressive and imaginative" (p. 156).
De Sousa (2007)	"…anything that someone does in a way that is original to the creator and that is appropriate to the purpose or goal of the creator" (p. 22).
Gibson (2010)	"…is no longer considered synonymous with intelligence" and it involves the ability to create meaningful, new forms…it also requires self-assurance and the ability to take risks" (p. 608).

Morrow (2010)	"…is the ability to foster an engaging and supportive environment for students, where learning is unhindered by the mechanics, but is freed due to exemplary and creative teaching practices and class management" (p. 2).

The definition of creativity in education has evolved in studies of different researchers. Earlier works focused on creativity as a framework for novelty. Over the years, studies on creativity in educational settings have accumulated, and the definition of creativity shows distinctive changes from a necessary novelty factor to originality and differences in the approach to the task. Another important change appears in the outcome orientation of the creative process, which should be meaningful and appropriate to a goal.

Based on the concepts from Table 1, the definition of creativity for this study is as follows: **creativity** is a goal oriented process of producing something that is new or original for the creator and the observers and that carries particular meaning for them.

Creativity versus Innovation

"Innovation" is another term that often replaces the term "creativity". These two words do not exclude each other; however, some academics and industry developers argue that there is a critical difference between them. For example, Marshall (2013) defines innovation as the appropriate solution to an unmet need with the help of creative resources. Convindarajan (2010) also insists innovation is not creativity. He emphasizes creativity is carried out by innovation; creativity leads to a result that is considered an innovation. According to the Longman dictionary of contemporary English (2006), innovation is "a new idea, method or invention" or "the

introduction of a new idea or a method" (p 485). This definition does not explain how innovation differs from creativity, but it is a good starting point for distinguishing these two terms. Many researchers define "creativity" and "innovation" as two closely connected but nonetheless different terms. For example, Hunter (2011) in his book "Out think: how innovative leaders drive exceptional outcomes," insists on the differentiation of creativity from innovation, stating that creativity is not necessarily innovation. Innovation is about introducing something new and unknown for the existing system or framework, while creativity is about the ability of the person not only to invent or conceive new ideas but to use what is already invented to serve particular goals" (p. 127). Govindarajan (2013) adds that innovation is just a tool in the execution of the creative idea. Innovation is more measurable and easy to observe, while creativity is subjective and more difficult to measure.

Everything begins with an idea. Creativity is the process of idea generation. Innovation is purposeful implementation of this idea. Following Creativity at Work (2014), these two terms cannot exist separately from each other. Innovation or production of new ideas represents only a part of creativity in educational settings (Morrow, 2010; Dale, 2008; De Sousa, 2007; Gibson, 2010; Trunnell, Evans, Richards, and Grosshans, 1997). Most reviewed sources recognize creativity in education as a personal construct that contains innovation, the ability to take risks, striving for excellence, and quality as the result.

This thesis study focuses on students' perception of teacher creativity in asynchronous online undergraduate courses and will use the term "creativity" as the main term.

Statement of the problem

According to one study, creative instructors are valued by university students. They motivate students to explore, discover, and learn. The number of online courses in different

domains grows every year, raising new questions of the academic and motivational gains in distance education. Past literature has documented the differences between the real classroom and virtual environments in various aspects. Instructional designers and instructors should take into consideration these differences when choosing course organization, course structure, and teaching strategies. Their choice could target one of the biggest problems in online education: high dropout rates. Bonk (2006) argues high dropout rates in online education are due to students' pleas "for richer and more engaging online learning experiences" (p. 22). There is no simple solution to this problem.

Multiple studies explore motivation and engagement in the online class as the potential solution to the problem of high dropout rates. The scope of performed literature research focuses on the exploration of the studies concerned with creative teaching and learning that is likely to motivate students and engage them as collaborators of educational process. The literature shows a wide range of definitions and understanding of the notion "creativity". However, multiple researchers agree on recognizing creativity in education as a personal construct that contains innovation, striving for excellence, and quality of the result. The definition of creativity used in this study is the following: creativity is a goal-oriented process of producing something new or original for the creator and the observers, and bears particular meaning for them.

Creative teaching raises some concerns in higher education. The reviewed studies emphasize positive outcomes of creative teaching, such as development of learners' creative thinking skills. The importance of supportive academic environments in accepting and facilitating teachers' creativity cannot be overestimated. With the growing demand for online classes, studies show the willingness of instructors to teach online as a good start. However, the transfer of classes into online environments should be thought through, involve meaningful

redesign, and be flexible enough for creative practices. Being a creative instructor takes time and requires multiple resources, and the online environment is a great enabler of creative expression.

Learning online is full of both excitement and frustration from the learner's point of view. With the change of instructor-student relationships online, greater responsibility for one's own learning falls onto the side of the learner. Online environments are not developed for everyone and require maturity and goal-oriented behaviour. Most adult learners, being excited to use technology, are very motivated to learn in an online class. However, high dropout rates show the drastic decrease of learners' motivation throughout an online course. Self-motivation may not be related to online course outcomes. It is the responsibility of the online instructors to create an engaging and intrinsically motivating environment. Considering the intrinsic motivation principle of creativity and the reviewed literature, I propose the following scheme of online creativity, which summarizes the findings from the studies reviewed in this paper.

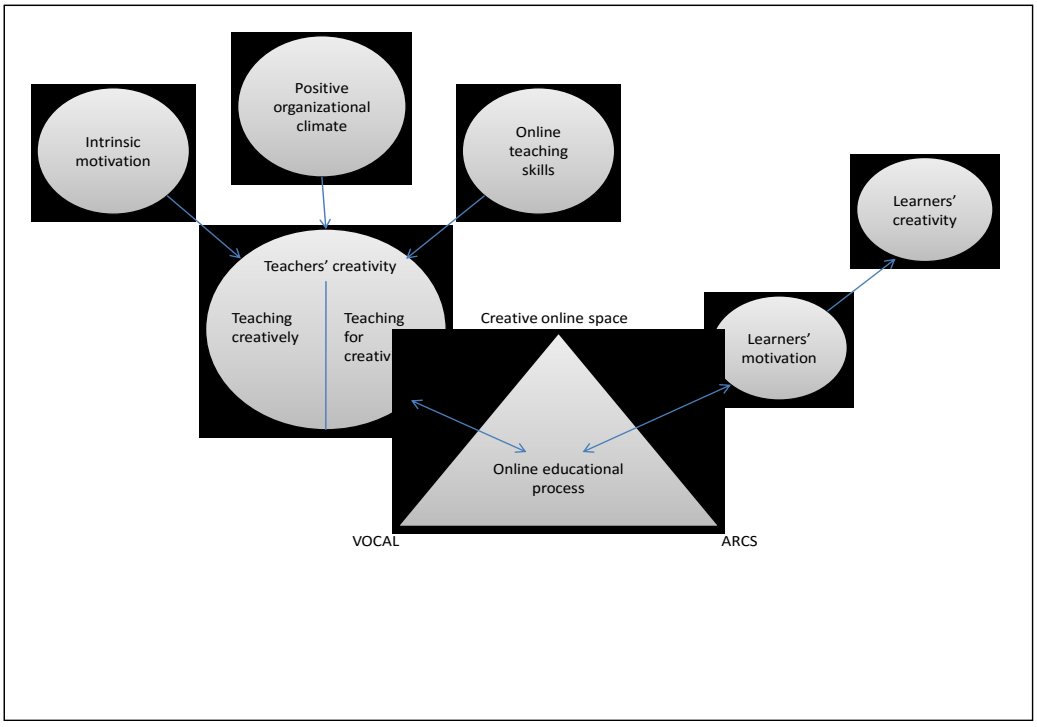

Figure 1: Creativity online

There is no doubt creativity is engaging and affects online class outcomes. However, most of the studies reviewed focus on the instructor and faculty perception of the creative approach online and of its defined effectiveness. As such, some questions are left: how do online students understand and perceive teacher creativity; how do online students differentiate between creative and non-creative online courses; is there a difference in the experience of the students taught by a creative online instructor and students taught by the instructors who are not considered creative; and does instructors' expressed creativity motivate online students to attend class and learn? These questions provide an interesting opportunity for further investigation. In an effort to answer these questions, this study evaluates how online university students define creative instructors and if the students are motivated to learn if taught by a creative instructor.

This study is intended to benefit participants, online faculty, instructional designers, administrators, and researchers. Participants will benefit by openly expressing their own opinions on the existing course, as well as by sharing their ideas on potential improvements of online teaching. Online faculty, instructional designers, and administration of educational institutions can benefit by understanding the perceptions of their students on teachers' creativity online, as well as by identifying potential creative strategies that can be implemented into undergraduate online courses. Researchers can benefit by better understanding conceptions and misconceptions of the learners on creativity online. With this understanding it will be possible to develop models about creative online asynchronous course for undergraduate students.

Purpose statement

The purpose of this qualitative study is to understand how creativity in asynchronous online courses affects undergraduate students' motivation to learn.

Central question

The central research question of this study is the following: how does creative online instruction affect students' motivation to learn in an asynchronous course?

Guiding sub-questions

The research guiding sub-questions are:

1. How do students define online creative teaching?
2. What are some of the creative teaching strategies utilized in online environments?
3. What is the essence of the experience for students in creative online environments?

Chapter 2 – Literature Review

This section reviews recent research on how creativity in teaching online affects undergraduate students' motivation to learn and their academic achievements. This literature review explores creative teaching, online learning and the effectiveness of creativity online.

Creative teaching

Reviewed literature on the topic of creative teaching shows extensive investigation conducted by multiple researchers. Narrowing the scope of interest, this literature review focuses on creative teaching in higher education, asynchronous online teaching practices, and asynchronous online creative space for teaching.

Creative teaching in higher education

Creativity in teaching, in higher education in particular, attracts attention of many researchers. For example, Dale (2010) supports the importance of teachers' creativity and explains that creativity in education can be expressed in teaching creatively and teaching for creativity. These two notions seem to be strongly related. Finding an original learning solution and thinking creatively over a teaching strategy, a teacher serves as a role model for a learner in problem solving. Teaching creatively, a teacher facilitates the acquisition of the skills to be creative. In his study, Dale (2010) explores the implication of creative teaching for higher education. Building upon the link between creativity, technological innovation, and economic prosperity, the researcher defines creative teaching through open-mindedness, readiness for experience, flexibility and spontaneity. Open-mindedness is well defined by Davis (1999) in his book "Barriers to creativity and creative attitudes". The author states that open-mindedness "includes not fearing the new, different or unknown and not making up one's mind in advance" (p. 172). Readiness for experience could be defined as a readiness of a person to perceive an event and to act instinctively (Astor, 1990). Flexibility in teaching is understood as instructor's

ability to adapt classroom to the learning needs with the variety of teaching methods (Zahorik, 1986). Caroll (2006) sees spontaneity in teaching when an instructor is able to accommodate intuition, rethink instructional planning and create a teachable moment in a sudden way. These four factors, open-mindedness, readiness for experience, flexibility, and spontaneity build environments that make creativity flourish. The point of interest is the necessity to build and support creative environments in academic organizations, especially in higher education. Ryhammar and Andersson (2001) investigated how the views of academic organization influence university teachers' degree of creativity and productivity. The results show a positive organizational climate has a strong correlation with high values of university teachers' creativity.

Positive organizational climate, open-mindedness, risk-taking, flexibility, and spontaneity create a space and possibilities for teachers' creativity. However, it is difficult to find an answer to the question of how teachers' creativity is expressed. Hennessey and Amabile (1987) argue it is much more difficult to see and identify something that is not creative than something that should be considered creative. The authors agree every person has a creative potential that can or cannot be realized. Their conceptual model of creativity includes three main factors that together lead to creative expression: domain-relevant skills, creativity-relevant skills, and intrinsic task motivation. Domain-relevant skills are considered basic and include "factual knowledge, technical skill, and special talents" (p. 9-10). Hennessey and Amabile (1987) argue that bigger the set of domain-relevant skills one possesses, the more possibilities one has to develop something new. Instructors' education, experience, and intelligence serve as the basis for the domain-relevant skills. Creativity-relevant skills are related to the level of intelligence and include "personality dispositions conducive to deep levels of concentration or uninhibited risk taking" (p. 10). Instructors' abilities for deep concentration and risk-taking are considered to be

creativity-relevant skills. The third component of creativity, intrinsic task motivation, includes "motivational variable that determine[s] an individual's approach to a given task" and depends on temporary situations (Hennesy & Amabile, 1987, p. 11). An example of a motivational variable can be a restriction of choices on how to accomplish a task. The authors argue that choice restriction may undermine creativity. Another example of a motivational variable can be the presence of a "watchful audience" which can also undermine creativity (p.14). Intrinsic task motivation strongly depends on social and environmental factors. The authors emphasize the significant role of extrinsic constrains which can decrease both intrinsic motivation and creativity. Creative expression is attained when all of these three factors are present and are not constrained by social and educational environments.

Online teaching practices

Educational environments in higher academic institutions are changing significantly by adopting asynchronous online settings. One of the main concerns in accommodating instructors and learners for being in an online class is the ability to sustain and improve the quality of provided education. Most instructors and students are willing to implement new technologies. However, instructors understand using technologies requires more time to prepare lesson materials. Some of them also lack knowledge to modify and adapt their teaching approach to online environments.

Asynchronous online environments represent definite challenges for teachers in higher education. Baran, Correia, and Thompson (2011) critically analyzed the literature on the topic of transforming teaching practices online. The researchers found out the common roles of the online instructors do not differ from the common roles an instructor plays in the classroom. Teachers' skills in the online class should include those of a pedagogical, social, managerial, technical, and facilitative nature, and of an instructional designer. The difference is in responsibilities an

instructor takes to fulfill these roles. For example, an instructor in collaboration with instructional designers and TAs should build a sufficient level of teaching presence and social presence throughout the course. Teaching presence is defined by Anderson, Rourke, Garrison, and Archer (as cited in Baran et al., 2011) as "the design, facilitation, and direct instruction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile outcomes". Baran et al. (2011) suggest teaching presence, as an important part of social presence in an asynchronous course, to be a shared responsibility among all the parties involved in course facilitation.

With the identified responsibility change, Baran et al. (2011) make the conclusion the "…techno-centric approach still dominant in many forms of today's online education, resulted in the replication of traditional approaches in the online environments and created one-size-fit-all preparation and support programs for online teachers" (p. 434). Instructors and instructional designers take a technology-centered, or techno-centric, approach to using educational technology when they implement technology without taking into consideration learning processes and the way how people learn. Instructors in higher education tend to transfer traditional approaches they use in face-to-face classrooms into online environments, preserving their traditional classroom roles. However, technology is a tool that can inspire and require new approaches to pedagogical practices in order to improve learning results (Baran, et al., 2011; Morrow, 2010; Ryhammar, Andersson, 2001; Dale, 2008).

Ryan, Hodson-Carlton, and Ali (2005) warn that redesigning pedagogical approaches in online courses can have both positive and negative consequences. The goal of their study was to validate the Matrix for Faculty Teaching Online - a tool for dimensional analysis of antecedent conditions, context, strategies, and consequences for online teaching. Validating the Matrix for

Faculty Teaching Online, the researchers point out some of the study participants experienced lack of spontaneity while redesigning for online teaching. Lack of spontaneity in online classes is also mentioned by university instructors who participated in Ryhammar and Andersson's (2001) study. These points of view seem to be more relevant to asynchronous online environments than to synchronous or blended learning environments. However, at this point in time, it seems to be impossible to say a lack of spontaneity hinders instructors' creativity in online classes. There are no studies found that highlight a connection between the notion of spontaneity and creativity in online classes.

Redesigned pedagogical practices in online environments build upon different student-instructor relationships. Without face-to-face interaction, especially in asynchronous classes, students take most of the responsibility load for their learning. Yukselturk and Bulut (2007) argue that for an online class to be successful for both instructors and students, it is the greatest responsibility of an instructor to create and support an effective online learning environment. Ryan, et al. (2005) acknowledge this instructors' responsibility and emphasize it requires a great level of energy, extra time for preparations, and creativity. Teaching creatively requires meaningful implementation of technological features of the used programs

A growing body of literature addresses teaching practices and strategies in asynchronous online courses. In an effort to stimulate the development of effective online teaching strategies that ensure student success, an interesting study was conducted by Schrum and Hong (2002). The researchers identified and examined the dimensions of successful online students and asked experienced online instructors to describe teaching strategies they used. Schrum and Hong (2002) identified seven significant dimensions of successful online learners: access to tools, experience with technology, learning preferences, study skills, study goals, lifestyle, and

personal characteristics. Ensuring students' success and taking into consideration the identified dimensions of a successful online learner, experienced instructors named socializing, support, interaction, flexibility, and minimizing technological difficulty to be successful online teaching strategies. To implement these strategies, instructors suggest requiring participation and students posting biographies, facilitating question-asking forums and collaboration, building in frequent interaction and providing a choice of topics.

Interactivity and support were also named best teaching strategies in asynchronous courses at the 17th Annual Conference on distant Teaching and Learning (Palloff & Pratt, 2001). Palloff and Pratt (2001) also emphasize that the most effective teaching practices online are the ones that focus more on facilitation. One of the effective strategies for online facilitation is building online learning communities. In their book on effective strategies for the virtual classroom, Palloff and Prat (2007) argue that building an online learning community addresses the issue of social presence in an asynchronous course.

A more detailed literature review on online teaching strategies will follow in the Comparison of findings with existing studies part of this thesis paper.

Online creative space for teaching

With the expressed requirement for creativity in teaching online classes, some of the researchers try to review existing principles of teaching excellence, and adapt or modernize them for online teaching practices. Savery (2005) claims online faculty should be Visible, Organized, Compassionate, Analytical, and a Leader-by-example (VOCAL) in order to build effective and productive online environments. Visibility is closely linked to the notions of shared experience and social presence, and it can be achieved with the help of personal websites, comments, e-mails, notices, updates, shared calendars, videos, and audio messages. Organization does not kill

spontaneity. It assists students' increased responsibility for learning, and it means anticipation. Organization can be achieved with the help of self-assessment reports, syllabi, early provided due dates, described class rules, a non-instructional place for discussions, forums, LMS capabilities, and various formats of online resources. Compassion is required of the instructor due to some specifics of online student populations, such as working students or parents. Permission for direct communication, "All About Me" discussions, ice-breakers, and class rules can help build compassionate environments. To be analytical means managing online classrooms, collecting and analyzing student data. Most LMS systems control a big part of it. It is beneficial to create small, frequent assignments and quizzes, and to specify required formats and conventions, as well as set clear expectations and guidelines. Model leadership can be achieved with the help of introductions, follow through on promises, and planned and implemented online activities. Creativity can be expressed in the specific original way an instructor chooses to be VOCAL.

The literature suggests that there are two opposite common beliefs about universities as primarily research institutions. One is that universities offer instructors the most freedom to create and achieve better subject grounded outcomes by applying innovative methods. Another one is that academia is a strictly organized place with multiple limitations in chosen methods and approaches to problem solving. These polar opinions raise more questions about efficient work in universities' online environments. Referring to Savery's (2005) VOCAL principles, Morrow (2010) conducted a phenomenological study to find out how university online environments influence the expression of teachers' creativity. The researcher found that university faculty have the freedom to manipulate online environments in creative ways to reach better outcomes. University faculty believe online technology is a huge enabler of creativity due to its novelty and

"coolness" factor. Online classes allow creative building of new, important, and effective relationships with students based on shared responsibilities for learning. Trunnel, Evans, Richards, and Grosshans (1997) also stated creativity can be triggered only when an effective teacher-student relationship is built. The conditions of effective environments allow teachers to better understand students' needs that are expressed verbally and in nonverbal ways. In effective environments, the instructor pays attention to a student's facial expression and body language, and uses these cues to improve further class development. If the online class is asynchronous, students' questions, forum discussions, and topics raised in chats should trigger instructor reflection on satisfying the student's educational needs. The instructor-student relationship is unique for every classroom. To recreate best practices of effective classroom environments, as well as to keep equal university standards among the courses, university services provide instructors with templates for their online classes. A course template provides a framework that serves as a model for future online courses. Teacher-participants in Morrow's (2010) study expressed mixed feelings about online class templates. Steward, Bachman, and Babb (2009) state that course templates give instructors an opportunity to teach from a well-designed website without building a course from scratch and to provide students with uniformity in structure. Provided by the academia, templates are considered necessary organizational materials, as well as a tool that restrains potential creative teaching strategies online. Morrow's (2010) study provides rich testimonies that well-organized and supported online learning environments in high education are the environments of creativity and productivity.

Online learning environments in higher education are not created by the instructors alone. In most universities, an online class is the result of the collaboration between a university service, professors and instructors, and instructional designers. There are multiple studies on the

effectiveness of teacher collaboration; however, there is no study on the results of how the teacher-university service-instructional designer team builds creative online learning environments, and on how this collaborative work influences online student motivation.

Learning online

Reviewed literature on the topics of creative teaching in higher education, online teaching practice, and online creative space for teaching represents a part of the online learning process. Teaching and learning are interrelated. They cannot exist one without the other. This section of the literature review focuses on the role students play in creative online environments. Selected studies suggest three main directions of attention: students' choice of the online environment, creative space for learning, and learning outcomes and motivation in online environments.

Students' choice of the online environment

Today students are offered the option to register for an online class or choose traditional face-to-face course. Learners who come to an online class have different backgrounds, demographics, and goals. According to Eom, Wen, and Ashill (2006), online education is not universal and does not suit the needs of all learners. Recognizing the great diversity of online class participants, several researchers are interested in characteristics that lead students to choose to learn online and can be important for a teacher to know and address.

Literature suggests that there are several factors that affect student success after enrolment in an online course Yukselturk and Bulut (2007), analyzing the factors that potentially influence learners' success in an online classroom, emphasize such personal characteristics as "gender, age, educational level…did not have a significant contribution to variance in success" (p. 77). What does influence online positive experience and quality of outcomes is the technology used, instructional approaches, structure of the course, and support provided, to name

a few. The researchers also state such factors as convenience, flexibility, and self-pacing in online classes attract mature and active learners.

What motivates students to enroll in an online course? In a study on the relationships of motivation, strategies, and choice of learning environment, Clayton, Blumberg, and Auld (2010), name convenience and self-pacing among the reasons for students' choice of an online class. Many of the one 132 post-secondary students who participated in the study named their current lifestyle and possibility for personal control as reasons to register for an online class.

In their studies, Yukselturk and Bulut (2007) and Clayton, Blumberg, and Auld (2010) depict great challenges for online instructors to use appropriate instructional approaches that will be beneficial, convenient, and flexible for all of the diverse online learners. This challenge opens a wide range of possibilities for the creative expression in course structure, material presentation, and the facilitation of learning process.

Creative space for learning

Learners who register for an online class are of different origins and ages, and come with a variety of educational backgrounds. Some of the university instructors in Morrow's (2010) study mention that, being mostly adults, online students have different needs than traditional-aged students. To answer their needs, it is not enough to meaningfully implement technology in an educational process and develop appropriate learning strategies. The most important goal is to build an educational background that creates balance between the accumulation of the knowledge and the development of practical skills, which is necessary for further employment. Answering the question of what employers need, Dale (2008) points to the growing demand for creative workers. Yankowska and Atlay (2008) support this position, emphasizing employers value more and more high-order problem solving and creative thinking. Jeffrey and Craft (2004)

recognize the distinction between teaching creatively and teaching for creativity; however, they argue that it is of utmost importance to recognize their relationships. Their research concludes that teaching creatively is strongly related to teaching for creativity and "the former is inherent in the later and the former often leads directly to the later" (p.14). Lin (2011) supports this perception and states that creative and innovative teaching practices represent the first aspect in fostering creativity through education.

Yankowska and Atlay (2008) conducted a study that aimed to construct a bridge between the traditional classroom and new learners, who are able to satisfy the growing need for creative workers. The researchers explored how the designed Creative Space influences learning, engagement, and motivation. Creative Space is a professional development classroom in the University of Bedfordshire. This room is designed with white writable walls, laptops, and spaces for collaboration and brainstorming. The findings show that, with adequate opportunities for exploration, experimentation, reflection, and problem solving, Creative Space is beneficial because of three main characteristics: aesthetics, unique atmosphere, and a wide range of uses. Even though Creative Space is a real classroom and not a virtual place, its characteristics are valuable because they can potentially be used for building a creative space in an online class. For instance, clean and efficient screen space, formal and informal chat space, and positive interaction create a very good online place in terms of aesthetics and atmosphere. Virtual classrooms can also have a wide range of uses, such as discussions, tutorials, workshops, training sessions, and different team work activities. Yankowska and Atlay (2008) emphasize the efficiency of the Creative Space in group work with multiple opportunities for the participants to be original, innovative, and inspired. The researchers believe it is designed to support both individual and small group work.

There is a vast amount of literature focused on the advantages and challenges of student group work in education. A growing number of studies investigate and compare individual creativity and group creativity in higher education. Most of the findings show creativity occurs in student collaboration. For instance, Fasko (2000-2001) insists instructors can stimulate creativity in students by providing both individual activities and group assignments. The dichotomy in findings appears when researchers try to discover if a learner is more creative individually or in a team. As such, Goncalo and Staw (2006) argue individualistic values are more beneficial when the goal is creativity. The researchers claim groups who value individual uniqueness are more creative than the groups who value collectivism. These findings contradict the results of Paulus and Yang's (2000) study on idea generation in groups as a basis for creativity. The researchers claim if the members of a group attentively process exchanged ideas and have the opportunity to reflect on them, "…the idea exchange process in groups can be an important means for enhancing creativity and innovation…" (p. 76). Paulus and Yang (2000) see the great potential of electronic brainstorming to be one of the valuable characteristic of online creative space.

Creative space in face-to-face classrooms or in online classrooms can be challenging to use. Yankowska and Atlay (2008) argue against overusing creative environments because of the possibility for them to lose their novelty and the feature of surprise. The importance of novelty in creative environments was also mentioned by other researchers (Trunnel, Evans, Richards, & Grosshans, 1997; Bonk, 2006; Morrow, 2010), as novelty evokes some creative thinking in education. There is a lack of studies exploring the effects of creative spaces without the factor of novelty. Investigating educational online environments, it is important to consider the novelty factor for both sides observed: instructors and students.

Learning outcomes and motivation in an online environment

The topic of motivation to learn has attracted a large number of researchers. Some of them investigate the effects of motivation on learning outcomes, others look for innovative solutions to boost students' motivation and engage them in the learning process for the benefits of successful learning. The notion of self-motivation surfaces when the sharing of responsibilities for the learning outcomes in online environments is discussed. Eom, Wen, and Ashill (2006) used a research model that includes student self-motivation, learning style, instructor knowledge and facilitation, instructor feedback, interaction, and course structure to find out what the determinants of student satisfaction and perceived learning outcomes are. The researchers also tested the belief that successful students are those who can motivate themselves. They found there is no relationship between the ability to self-motivate and learning outcomes. The researchers cannot explain this result within the framework of this study. Believing self-motivation should lead students to succeed and reinforce students to learn. Eom, Wen, and Ashill (2006) suggest further exploration of the conditions needed for positive relationship between self-motivation and learning outcomes. The results of this study indicate course structure, learning styles, instructor facilitation, and interaction have a significant relationship with students' satisfaction. It is also stated there is "a clear relationship between instructor feedback and student satisfaction and perceived outcomes" (p.229). Instructor's feedback is called the most influential motivator in online environments.

Observing adult students' interest in technology and their fast developing abilities to manage technological devices, I assume one could think students are intrinsically motivated to learn in an online class "by default". However, Bonk (2006), Yukselturk and Bulut (2007), as well as Chen and Jang (2010), claim that high attrition rates in online courses are the result of students experiencing motivational problems. During online courses, students become bored.

The researchers emphasize maintaining previously high motivation is difficult for online students due to increased responsibility for learning outcomes.

Exploring motivation in online learning and testing self-determination theory, Chen and Jang (2010) argue adult students perceive face-to-face and online classroom environments differently. The researchers believe it is the online instructor's responsibility to "create an open, interactive, and learner-centered atmosphere for students to freely express their feelings, thoughts, and concerns" (p.750). Investigating how motivation can impact academic procrastination in the online class, Rakes and Dunn (2010) also agree online faculty should address questions of intrinsic motivation and students' effort-regulation. How? By creating online environments that support creativity (Trunnell, Evans, Richards, & Grosshans, 1997); by creating engaging online experiences (Bonk and Kim, 2006); by providing supportive feedback (Eom, Wen, & Ashill, 2006); by innovating learning activities (Clayton, Blumberg, & Auld, 2010); by building strong teacher-student relationships (Gibson, 2010); and by being original (Ryan, Hodson-Carlton, & Ali, 2005; Rihammar and Andersson, 2001; Yankowska & Atlay, 2008; Morrow, 2010).

Emphasizing the interconnection between creativity and motivation, Amabile and Pillemer (2012) believe intrinsic motivation leads to creativity while extrinsic motivation is detrimental. In 1983, Amabile articulated this Intrinsic Motivation Hypothesis of Creativity. In 1996, this principle was revised and renamed to Intrinsic Motivation Principle of Creativity due to collected evidence by the researcher that intrinsic motivation is crucial for being creative. Intrinsic motivation can easily slide into extrinsic motivation. Amabile and Pillmer (2012) believe social and environmental factors are very important to support intrinsic motivation for creativity.

One solution to improve learners' motivation in online environments deserves special attention. Keller and Suzuki (2004) validated a four category model for the design of motivationally enhanced online instructions - the ARCS model. ARCS stand for four categories of motivational concepts: Attention, Relevance, Confidence, and Satisfaction. ARCS represents ten consecutive steps in designing motivational learning settings: obtaining course information, obtaining audience information (attitudes), analyzing audience (motivational profile), analyzing existing materials, designing objectives and assessments, listing potential tactics, selecting tactics, integrating them with the instruction, selecting and developing materials, and evaluating and revising. The value of this model is in the idea that an instructor should not try to control motivation, but rather should influence it with the help of the learners' motivational profile and chosen motivational enhancements. The list of potential motivational enhancements is very long- from extensive feedback to the distribution of various "motivational messages". By using the ARCS model for the organization of motivational online learning environments, an instructor can be creative in motivational tactics for innovation or in using them in original ways.

Effectiveness of creativity online

Creativity is perceived differently by university faculty, higher education instructors, and online students. Jackson (2006) identifies some problems of accepting creativity as a vital part of an online instructional approach: it is mostly taken for granted, it is rarely an objective for assessments, lacks a clear definition, and requires more time and work. De Sousa (2007) investigated how students and faculty perceive teacher creativity and effectiveness. Creativity in this study is defined as "anything that someone does in a way that is original to the creator and that is appropriate to the purpose or goal of the creator" (p. 22). Effective teaching in this study is defined as "a successful communication process between teachers and students, which is

perceived by the students as novel and valuable in helping them to develop and to be ready to face new challenges" (p. 22). Contrasting creative teaching to effective teaching, faculty did not recognize effectiveness as being in a cause-effect relationship with creativity. On the contrary, students believed the most creative teacher is the most effective one. These results raise multiple questions about the definitions of creativity and effectiveness in an online environment, as well as the differences in understanding of these terms by all parties involved, namely the faculty, the instructors, and the students.

Chapter 3 – Methods

Rationale for qualitative approach

Both qualitative and quantitative approaches to the research were considered. Outlining the characteristics of both quantitative and qualitative research, Creswell (2012) states the choice of the approach is based on the nature of the research problem. The research problem in focus has an aim for the audience to learn about the views of individuals in order to understand in depth the central phenomenon of creative teaching online. Because of the exploration required, a qualitative approach was chosen as the appropriate type of research for this study.

Once the qualitative approach was selected, its most appropriate type has to be determined. According to Baxter and Jack (2008), if a research facilitates exploration of the phenomenon within its context, with the use of a variety of data sources, and without possibility to manipulate the behavior of those involves, it is defined as qualitative case study research. Because of the desire to explore the contextual conditions of one separately taken online course that is considered creative by the faculty, a qualitative study approach for this research is the most appropriate. The collected data were used qualitatively.

Study sample and site

In order to generate rich material of views and opinions on the research topic, maximal variation purposeful sampling was chosen. Creswell (2012) explains that to obtain this type of sampling, the researcher "…identif[ies] the characteristic and then finds sites or individuals that display different dimensions of that characteristic" (p.208). The characteristic for this study was identified as follows: an undergraduate online asynchronous course that is considered creative among the faculty. After the email and face-to-face discussions with eConcordia staff, the online course Discover Statistics was chosen because this course is deemed to be creatively taught and its students can provide the richest perceptions on the phenomenon of creative online teaching.

The students enrolled in this course during spring term and summer term in 2015 were invited to participate in this study. A detailed description of the course Discover Statistics is provided further, in the Online Course Overview part of this paper.

The data were gathered uniquely from the students and did not include any input from the instructor of the course, course development group or course TAs. With the study goal to describe students' perceptions on the phenomenon of teacher's creativity in an online course, the researcher focused on the words and feelings of the students enrolled in the Discover Statistics.

The collected data did not include performance data due to two reasons. Firstly, students may have some concerns about releasing their achievement grades to the third party. Therefore, collecting performance data could potentially reduce the number of participants in the study. Secondly, collecting performance data could put some timely restrains to the data collection. For example, access to the participants can be reduced or very limited after the final grades are released. Another example of the potential time restrictions is the requirement for the participants to complete the MSLQ before their finals which can lead to their dropping out of the study.

Access and permissions

In order to receive permission to conduct this study, a research Summary Protocol Form was sent to the Concordia University Research Ethics Unit. As a result, the researcher received Certification of Ethical Acceptability for Research Involving Human Subjects.

In order to receive permission to access the course Discover Statistics, an email was sent to the professor responsible for creating and teaching the course (see Appendix 1). This email explained the purpose of the study and asked the professor to participate in this study by providing access to class materials and to potential student participants. A face-to-face meeting followed. During this meeting the researcher answered the professor's questions on the details of

conducting the study, as well as discussed the professor's support and availabilities. After this meeting a consent form was sent to the professor to be signed (see Appendix 2). The provided consent form was signed electronically and was submitted via email.

All students enrolled in the Discover Statistics course were considered as potential student participants for this study. All of them received an introductory email that stated the purpose of the research and sought their participation (see Appendix 3). Informed consent from all of them was solicited online via email (see Appendix 4). The consent form was submitted with either a digital signature or with manual signature in a scanned file. Students who did not submit a signed consent form were not asked for their responses to the questions or questionnaires. In order to have sufficient number of participants, there was a need to involve two groups of students registered for the course in two different terms. The first time students who were registered for the Discover Statistics course in winter 2015 were invited to participate. The invitation email was send out after the course began, close to the middle of the term, so few responses were received. The second time students who were registered for the same course was in summer 2015, and they also invited to participate. This time the invitation email was sent in the beginning of the term. As the result, a sufficient number of participants was attained.

Study demographics

Seventeen undergraduate students participated in the study. Two of them were enrolled in the course Discover Statistic in the spring term of 2015, and fifteen of them took this course in the summer term of 2015.

Table 2: Demographic characteristics of the participants

Factor	Total N (%)	0 classes online experience	1-3 classes online experience	>4 classes online experience

		N (%)	N (%)	N (%)
Age				
18-24 years old	11 (65)	5 (29)	4 (24)	2 (12)
25-34 years old	5 (29)	2 (12)	3 (18)	-
35-44 years old	1 (6)	1 (6)	-	-
Gender				
Male	1 (6)	1 (6)	-	-
Female	16 (94)	7 (41)	7 (41)	2 (12)
Ethnicity				
Caucasian	10 (59)	4 (24)	5 (29)	1 (6)
Asian/Pacific Islander	4 (24)	3 (18)	1 (6)	-
Hispanic or Latino	1 (6)	1 (6)	-	-
Other	2 (12)	-	1 (6)	1 (6)
Highest degree				
Associate	2 (12)	-	1 (6)	1 (6)
Bachelor's	2 (12)	-	2 (12)	-
Trade/Technical/Vocational	5 (29)	4 (24)	1 (6)	-
High school	4 (24)	2 (12)	2 (12)	-
Professional	2 (12)	1 (6)	1 (6)	-
Some college credit	2 (12)	1 (6)	-	1 (6)
Mother tongue				
English	10 (59)	5 (29)	4 (24)	1 (6)
French	3 (18)	1 (6)	2 (12)	-
Other	4 (24)	2 (12)	1 (6)	1 (6)
Employment status				
Employed	6 (35)	3 (18)	2 (12)	1 (6)
Student	10 (59)	4 (24)	5 (29)	1 (6)
Self-employed	1 (6)	1 (6)	-	-

From seventeen participants, sixteen are female and only one is a male. The biggest number of the participants, namely 11, are of the age 18 to 24 years old. Ethnical diversity of the group does not include either Black/African Americans or First Nationals/Aboriginal participants. Most of the participants speak English as their mother tongue. The numbers of students and employed participants are almost evenly split.

All the participants' demographic profiles were analyzed regarding their experience with online classes. There are three distinguished groups: eight participants who do not have any experience with online learning, seven participants who were enrolled in one to three online courses, and two students who have experience with four or more online classes. Demographic characteristics of the representatives of each group are various. There are no obvious relationships between online experience students had and any other variables from their demographic profiles.

Data-gathering strategies

After access to the course and permissions were received, the data collection began. The first step for the researcher was to log into the course and explore its structure, design, characteristics, and features. The following items were in focus: course outline with course description and requirements for students, course introduction with the samples of activities and online directories, and course online pages. This online class experience provided firsthand information on some strategies the teacher used and the creative approach he endorsed. The researcher's experience is discussed below in a detailed overview of the course elements. During this exploration the researcher took screenshots to depict the milestones of the course structure and content, and wrote down the notes with personal observations on her own learning experience in this course.

The second step was performed during the third week of the semester. During this step, student participants received the Demographic Survey (see Appendix 5). This survey was built on the SurveyMonkey platform, filled online, and submitted for the researcher's view. The data received in the survey helped the researcher to group participants by their age, gender, educational level, experience, and interest in online learning. The purpose of collecting these data was to identify if there are any differences in students' perceptions on online teacher's creativity among the identified demographic groups. These data were used together with other findings. However, because of the small sample size, some of the collected demographic data were utilized for coding, but most were not used for the purposes of analysis.

The third step of this study occurred during the seventh and the eighth weeks of the course. The researcher scheduled online interviews via either Google Hangout, Skype, FaceTime, or over the phone. The choice of interview medium was offered to the participants and depended on their familiarity with any of these technologies and the accessibility of these technologies. The time for students' participation in the interview depended on their schedule and availabilities. Each of the participants was provided with instructions on how the interview would be conducted. The researcher used a semi-structured interview protocol (see Appendix 6). Collected interview data provided insight into how students understand teachers' creativity and their experience in online classes. There are six questions planned to be asked during the interview:

1. Please, describe your experience in this online class.
2. How do you define creativity?
3. How do you define creative teaching?

4. What are some creative teaching strategies you observed and experienced in this class?
5. To what extent do you consider this class creatively taught?
6. How does teacher's creativity in this class effect your motivation to learn?

Questions 2 and 3 supported the first research sub-question and aimed to find out how the participants understand the term creativity and how different is their understanding of teaching creatively. Question 4 is the second sub-question of this research. It was expected to reveal what definite tasks or activities are considered to be creative by the students. The rest of the questions, questions 1, 5, and 6, supported the third sub-question of the research and aimed to bring understanding of the essence of students' experience in an online class that was deemed to be creative.

After the participants filled out the Demographic Survey, they were contacted by the researcher via email with a request to schedule a virtual interview and choose its medium. In case none of these options were convenient, a simple phone call was suggested. At the scheduled time and using the medium of the student's choice, the researcher contacted the participant and conducted the virtual interview. These interviews were recorded for further analysis with the help of a QuickVoice mobile app. In the beginning of each interview the researcher obtained student's consent about the recording. Then the researcher asked the first question from the interview protocol. As interviews were semi-structured, the researcher followed students' answers and explanations to get as much information on the topic as possible and to understand student's thinking and feelings. However, the researcher made sure that all the required questions from the protocol were asked. In the end of each interview, the researcher explained what the

next participant's step was (invitation to fill out the Motivated Strategies for Learning Questionnaire), and thanked the student for participation.

The fourth and final step in data collection occurred during the last two weeks of the course and a week after the course was finished. At the end of the course, student participants answered the Motivated Strategies for Learning Questionnaire (see Appendix 7) developed by Pintrich & DeGroof (1990). Having been used in multiple studies (Clayton, Blumberg, & Auld, 2010; Rakes & Dunn, 2010; Yukselturk & Bulut, 2007), this instrument is perceived to be valid and reliable by Rotgans and Schmidt (2010). Rotgans and Schmidt (2010) also explored the utility of MSLQ. The researchers defined this instrument as an appropriate tool to determine motivational beliefs and learning strategies of the students on both curriculum and course levels. The MSLQ questions were built in the SurveyMonkey platform. Student participants used the provided link to enter the questionnaire, answer the questions, and submit their answers online.

Data analysis approach

As the main interest of the researcher to investigate the creative teaching process in university online environments, Grounded Theory was used for data analysis. According to Creswell (2012), Grounded Theory is the best way to explain the process because it "fits the situation, actually works in practice, is sensitive to individuals in a setting, and may represent all of the complexities actually found in the process" (p.423). Being a beginning researcher, and willing to emphasize procedures and categories, I choose the systematic design for this study, i.e., used open, axial, and selective coding, and develop a logic paradigm of the generated theory (Corbin & Strauss, 1990).

Preparation for data analysis and the process of data analysis began as soon as the first data were collected. Following Creswell's (1012) suggestions, collected data were organized by

type and the matrix of sources was used to help in data location. A large volume of data was collected with the help of field notes and audio recordings. These materials were transcribed into text. During final preparation of the data for analysis the researcher used the HyperResearch computer program to organize the materials. The transcribed data were uploaded into HyperResearch and divided into four cases:

1. Data received from the 18-24 years old participants without online learning experience
2. Data received from the 25-40 years old participants without online learning experience
3. Data received from the 18-24 years old participants with minimal or extensive online learning experience
4. Data received from the 25-40 years old participants with minimal or extensive online learning experience

Following Corbin and Strauss's (1990) phases of the systematic design in grounded theory, the researcher performed the first step of data analysis - open coding. The basic themes emerged from the collected data. The researcher used in vivo codes to label some themes in order to make the voice of the participants sound. The emerged themes are described in details in the Analysis of Themes section.

The second step in data analysis was axial coding. For its purpose constant comparison was performed. Corbin and Strauss (1990) emphasize "only by comparing incidents and naming like phenomena with the same conceptual term can a theorist accumulate the basic units of theory" (p. 420). During the axial coding phase, the researcher identified six categories of information according to Creswell (2012): causal conditions, context, intervening conditions, strategies, consequences, and core category. In this research, teacher's creativity online is chosen as a core category because it represents the center of the process being explored. Then, every

open coding category was examined determining how it was related to the core category. For example, one of the open coding categories was motivational effects. In this category participants defined their level of motivation to learn in this online course and name what exact course item or what actions made them motivated. Several students mentioned the virtual game as a big motivator for them. This brought another open coding category into play: creative teaching strategies. The researcher observed students' opinions on how creative the virtual game was for them. Most of them agreed that they considered it to be a very creative strategy for an online undergraduate course. So, by comparing open coding category in regards of its relationship to the core category and to the other coding categories, in this example one can come to the conclusion that gamification is a creative strategy the teacher used in this course and that increased student's motivation represents consequences of this strategy employment. A detailed description of each category follows in the Coding Paradigm section.

The third and last step in data analysis was selective coding. The researcher generated a theory or a hypothesis in two steps: creating visual coding paradigm and writing a descriptive story on how the categories interrelate in the proposed theory grounded in data. A detailed description can be found in the Discussion section.

Throughout the process of data analysis, the researcher created and used memos. According to Corbin and Strauss (1990), memos are important revisions and reflections on categories, questions, and relationships that result in satisfying and elaborated theory. For example, trying to identify personal characteristics of a creative teacher, the following memo was written:

> It becomes clear to me that a teacher who is considered to be creative has definite personal characteristics. Students describe such teacher as charismatic, passionate

> about the subject, and compassionate to the students. Students say, he is "alive" and make them feel the same about the subject. Mostly they feel it during Virtual Office Hours. May be that is why they request more videos and virtual communication.

Another example of the memo is the following one, written in the attempt to understand the relationship between badges, leaderboard, and student motivation:

> It is obvious that most of the students adore earning badges and seeing their names on the top of the leaderboard. It is interesting to know if this feeling of competitiveness is dependent on the culture and mother tongue in the actual study. At the moment 4 Asian and 1 Hispanic participant, potentially with a collective cultural background, express the same desire to compare themselves to others in achievements.

To determine accuracy and credibility of the findings, the researcher validated them by triangulation. Triangulation was done by collecting data of different types: observations, interviews, and a questionnaire. As the researcher observed the course, every students' opinion was compared with the researcher's personal observations and experiences. For example, when participants were talking about the teacher's personal characteristics that encouraged them to be engaged and motivated, the researcher compared these opinions with personal experience to identify the most powerful manifestations of the teacher's personality. One of it was the use of humor in described problems. One more comparison with the data was performed to identify if participants highlight the same teacher's personal influential characteristic. The data collected supported that teacher's humor was both appropriate and creative in the lesson context. When motivational effects of creative teaching were identified using interview data, the analysis of MSLQ data was performed. The results were compared with the results stated in the interviews

to identify potential discrepancies and find out if student's motivational level claimed in the interview is supported by the motivational level presented in the MSLQ by the same student.

Chapter 4 – Context Description and Results

Online course overview

This section provides an overview of all the functionalities and features of the course without referring to them as creative. Students' perceptions on which of them are considered creative will be discussed in the following sections.

Discover Statistics, (INTE 296), is an asynchronous online course for undergraduate students at Concordia University. This course provides introductory knowledge of Descriptive Statistics. It is offered to the students over the spring and summer semesters of 2015. The main goal of this introductory-level course is to give the students tools to conduct research, analyze and interpret data, and most importantly, to make informed decisions.

The course is structured into Lessons, Badges, Discussion board, Resource Centre, Visual Agenda, Assessments, and Tables. Each component is described in detail below.

All the materials for the course are provided online: electronic version of the notes to be printed, video tutorials, assignments, practice problems, and discussions. According to the course outline, the students do not need additional textbooks. All the students are invited to participate in Virtual Office Hours via Adobe Connect to ask their questions and to listen to additional explanations of complex notions. For those who cannot participate, the record of the Virtual Office Hours is available on the course site.

Every time a student logs into the course he/she enters the Welcome page (see Figure 2). Here students can view the functional parts of the course, such as lessons or the discussion board, information on the recent activity of the student, and the latest badges received by fellow students. Visuals and colours used in the course design are pleasant to the eye and divide the course window into two functional parts: the header part with the directions to other pages, and

the action field where a student can view the content and participate in activities. This design is consistent throughout the whole course

Figure 2: Welcome page

Lessons

When a user clicks on the Lessons menu option, the lessons outline page opens (see Figure 3). All lessons are numbered and represented as round bullets. When users roll the mouse over a number, it changes its color and becomes active. The right part of the screen displays main topics of the chosen lesson. This functionality of the course design allows users to look through the topics and find the one they are looking for without entering and exiting every

lesson. To enter the lesson, one should click on a numbered bullet.

Figure 3: Lesson outline

One of the characteristics of the Discover Statistics course is the existence of Lesson 0. The goal of this lesson is to present a short overview of the course, introduce course navigation, provide some optional readings on the topics, introduce the way students' work will be evaluated, and highlight technical requirements for the course. When one clicks on the Lesson 0 bullet, the Lesson 0 Introduction page opens (see Figure 4).

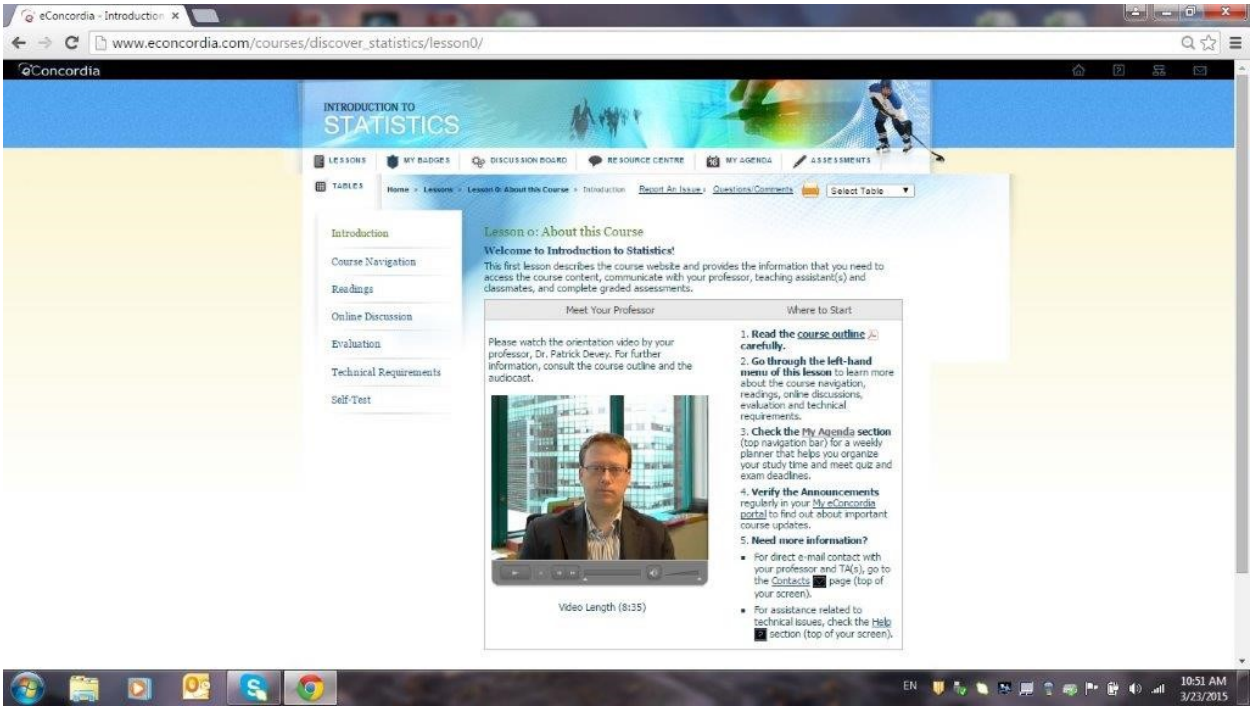

Figure 4: Lesson 0 - Introduction

The structure of the lesson page has changed. The header is narrower and includes the menu tabs. The lesson display area has become wider and is divided into two parts: lesson navigation and lesson content. Lesson navigation tabs are displayed on the left hand side. The tab that is open at the moment is of a different color. Lesson content display is wide and can include content of different types, like a video and text blocks that include hyperlinks in the image. Beginning with this lesson page and in most of the other pages there are options for student-teacher-teacher assistant communication. Firstly, a student can Report an Issue, such as typos, broken URLs or technical issues. Secondly, students can ask Questions or leave Comments. They also can choose and print out necessary statistic table. This structure of the course window is consistent throughout all twenty course lessons.

Another feature of the course design can be viewed on the next page of the Lesson 0: Course Navigation (for the topics discussed in the following paragraphs see Appendix 8, Images

1-8). There is a progress bar to the top right of the content display area. This bar shows how many slides the learning part has, how many slides were viewed and how many slides are still to be opened, and on what exact slide of the learning part students are currently located. There are two navigation options one can use. In the top left corner of the lesson content display a learner can go back to any previous page till the home screen. Under the course content there are two buttons that can be used to navigate back and forth within the learning part.

The textbook for this course is not provided. Instead, the e-book of required reading materials is integrated into the study notes of each lesson. Some other assigned readings are uploaded to the Lesson 0 in PDF format or are presented as a hyperlink. Some other suggested reading lists provided here and there throughout the course.

Online discussions are a big part of this course. Lesson 0 provides students with the directions on how to participate in these discussions, how to contact the teacher or TAs directly, as well as how to find the student's discussion group. The students are expected to read the Discussion Board Tutorial to know Dos and Don'ts of discussion board participation. The researcher did not track if the participants read the tutorial. However, the students often expressed their opinions on how helpful the discussion board was, which points to their frequent use of the board discussions.

Another page of Lesson 0 provides students with information about student evaluation and course evaluation. Here, the teacher uses both horizontal and vertical text boxes. These text boxes include hyperlinks to the required actions. In the case of this Evaluation page, the text boxes direct students to the instruction on students' examinations, and to options to rate this course.

Technical requirements for this course are displayed on the Technical Requirements page of Lesson 0. These are hardware requirements, browser and plug requirements, and browser settings. The first two groups of requirements are provided for both PC and Mac. Browser settings details highlight the use of Internet Explorer or Mozilla. This lesson page includes hyperlinks to specific requirements.

Another feature of the Discover Statistics course is the presence of Self-Test or Self-Assessment in the end of every lesson. The structure and the design of these self-tests are consistent throughout the course. Appendix 1, Images 6, 7, and 8 represent an example of self-assessment, a feedback after a correct answer, and a feedback after a wrong answer. Self-tests consist of five to ten multiple choice questions. Some of the questions require students to remember parts of the material provided in the lesson. Most of the questions, however, are built as well-thought problems that can be met in real life. These questions allow students to show their understanding of the material and practice the transfer of theoretical knowledge into practice. The correct answer is shown in green on the feedback screen. The student can also track the score in the low left side of the test. Incorrect answers are shown in red. The feedback screen for incorrect answers states the correct answer option but does not offer an explanation. Self-tests can be completed as many times as a learner wishes.

All the lessons except Lesson 0 have the same structure. They consist of Objectives, Study Notes, Practice Questions, and Self-Assessment. The Objectives of the lesson are presented by the topic general description and bulleted objectives (see Figure 5).

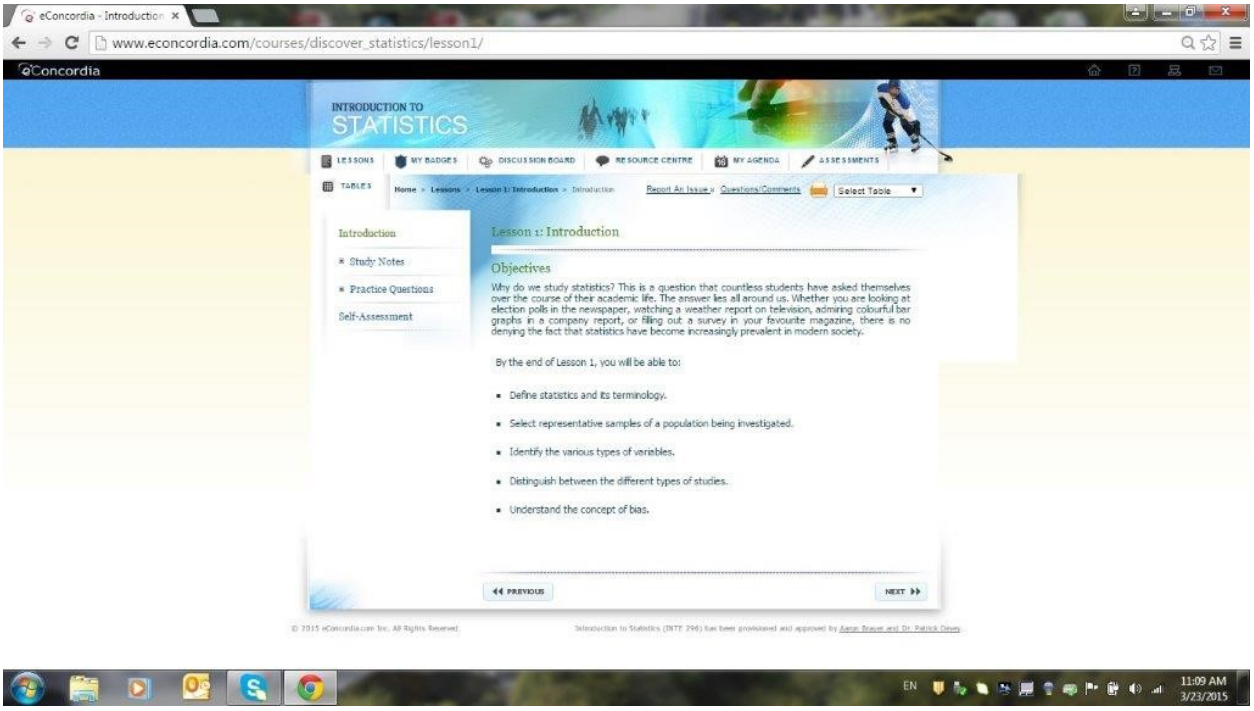

Figure 5: Lesson 1 - Objectives

Topic general descriptions can be presented as a question that will be answered in the lesson, as a statement that will be proven, and as a problem that will be solved. The number of objectives covered in a lesson depends on the content amount and content depth provided.

The Study Notes tab in the left side menu when clicked on, provides the overview of the main parts of the lesson (for the topics discussed in this and the following paragraphs see Appendix 8, Images 9, 10, and 11). Bold font and darker square backgrounds are used to focus learners' attention on important notions, formulas, and definitions. Small infographics, tables, and images are occasionally used to support a point stated in the lesson. Where appropriate, the point is illustrated by a descriptive example, equation or an example of calculations. Some Study Notes include built-in exercises. They are similar to Practice Questions described below. Lesson study notes finish with the recap of learned material and the statement of the next lesson topic.

Similar to Study Notes, the Practice Question tab in the left side menu offers a choice of problems for practice. All the Practice Questions are built as real case scenarios. After the case description, the task is presented in bold font. Students always have the opportunity to click on the Show Answer button, and see both the correct answer and the explanation of the problem solution. A student can hide the answer and try to solve the problem one more time.

Some of the lessons have a Play the Game! Tab in the left side menu. Clicking on this tab, students are invited into the Lickwified virtual manufacture as a new Quality Control Manager (see Figure 6).

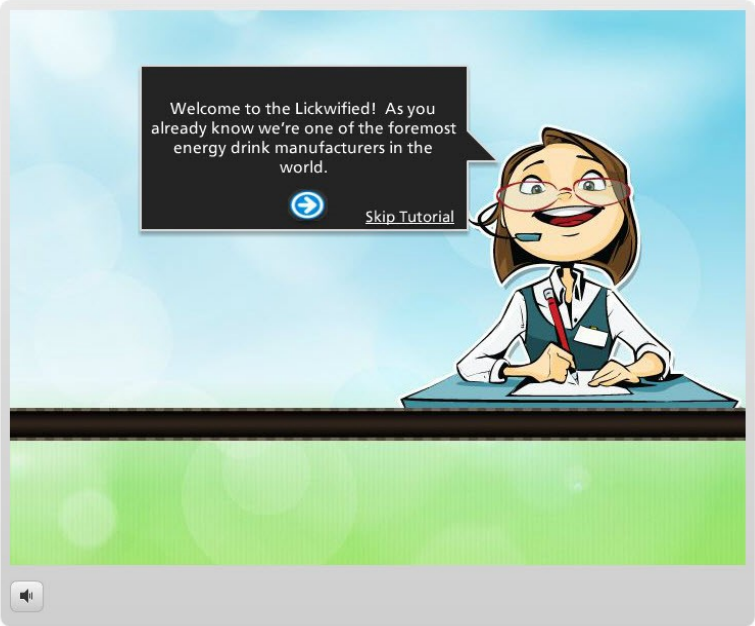

Figure 6: Lesson 12 - Game

The game offers multiple real life tasks the manager should accomplish using their knowledge of statistical notions and calculations. Every time a student enters the game, he/she can watch the tutorial or skip it and proceed to the managerial tasks. Every game screen is

supported by the prompts on what the task is, what to do next, what is the player's score, and how much time passed from the beginning of the game (see Appendix 8, Images 12 and 13).

Badges

Discover Statistics offers students not only the lessons with theoretical and practical content but also badges for their compulsory and additional activities (see Figure 7). Participation in badge activities is not compulsory and can add 5% bonus marks to the student's grade.

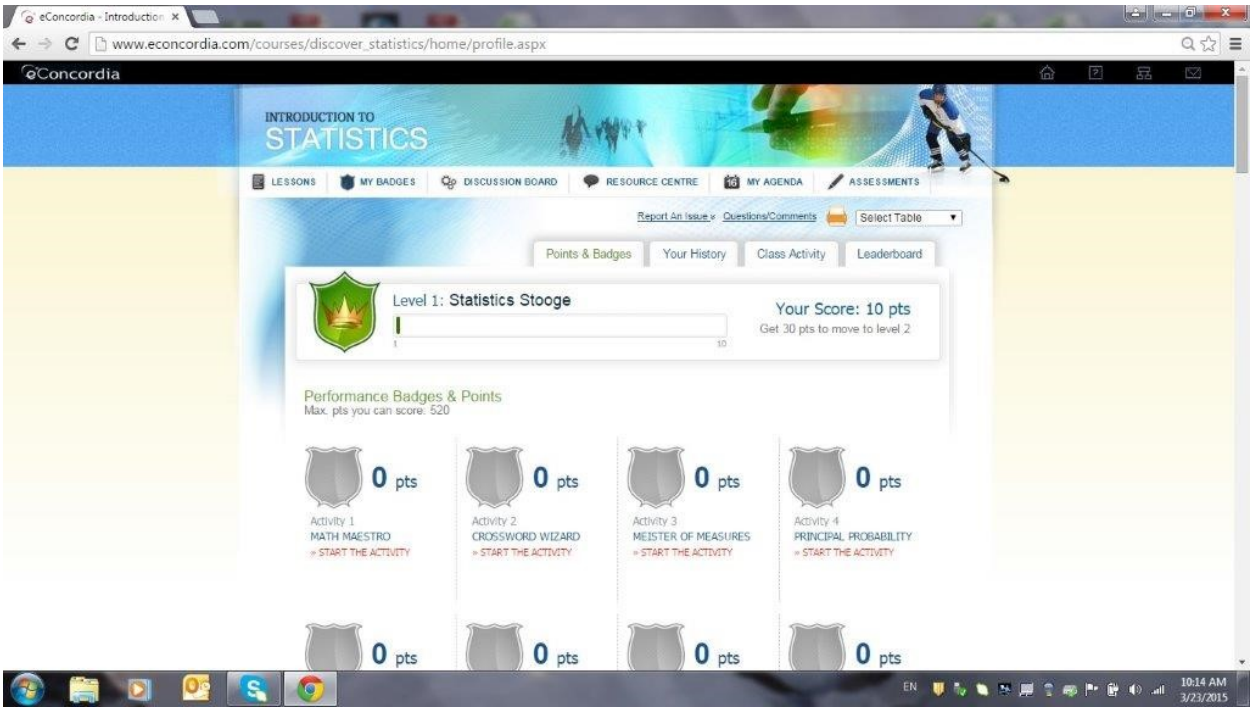

Figure 7: My badges - Points and Badges

Every badge has its name, its icon, and a number of points assigned to it (for the topics discussed in this and following paragraphs see Appendix 8, Images 14-17). The names of the badges are attractive, humorous to some degree, and representative of the activity the badge is awarded for. For example, the badge "Don't hate, correlate" is given to students who accomplish the activity on correlation, or the badge named "Principal probability" is given to students who completed

the activity on calculating probability. The icon of a badge is grayed out and becomes visible only when the badge is earned. When a student is ready to begin the activity, he/she can reach it by clicking on the red “Start the Activity” link. If the badge is not given for the completion of an activity, a student can click on the link “How to Unlock This Badge” and view its description and requirements.

All the badges are divided into four groups depending on what they are awarded for:

1. Performance badges and points: A student’s score can reach a maximum of 520 points. Each badge from this category is given for the accomplishment of an activity on a specific topic. This category contains eleven badges.

2. Completion badges and points: A student’s score can reach a maximum of 205 points. Each badge from this category is given for the accomplishment of each lesson of the course. As there are twenty-one lessons plus Lesson 0, there are twenty-two badges in this category.

3. Loyalty badges and points: A student’s score can reach a maximum of 175 points. These badges are given for different ways a student learns. For example, the Early Riser badge will be received by the student who logs into the course and starts learning early. Opposite to this badge, there is another one that is called Night Owl. It is given to the students who log in and study late at night. This category also includes all five Bonus Buzzes. Bonus Buzz is a hidden badge which students receive when they do not expect to, such as when they complete extra exercises or activities. There are seventeen badges in this category altogether.

4. Community badges and points: A student's score can reach a maximum of 55 points. These badges are given for communication and participation in the discussion board. There are five badges in this category.

Students can visit this page to reach all the badges, choose one, and complete what is required to get it. However, Performance and Completion badges, as well as Bonus Buzzes are spread throughout the course. Any student can get them by simply following the course schedule, classes, and activities.

Points and Badges screen displays the total score from the collected badges. The level bar shows in green what level a student is in. Next to the level bar there is a prompt on how many points one needs to move to the next level of learner. There are ten levels students go through the course collecting badges and points.

Your History tab leads students to a new window (for the topics discussed in this and following paragraphs see Appendix 8, Images 15-17). This window displays all the badges and points awarded for one's activities. In the table a student can see the date the badge was awarded, the name of the badge, and the number of points earned. The students can track their progress with badges and points on this page.

If the students would like to see what badges or points were awarded to other students, they use the Class Activity tab. The table in this window is similar to the table of My History window with the date the badge was received, the name of the badge, and the points earned. There is one more column added: the virtual names of the students who have received the award.

The last tab under My Badges is the Leaderboard. The newly opened window displays a list of total achievements of the students in the class. Every student was able to choose their

virtual name when building their virtual profile at the beginning of the course. The Leaderboard lists students under their virtual names. It shows who from among the student group received the greatest number of points, what level of learning they are at, and what place they occupy in comparison with other students.

Discussion board

The Discussion Board tab leads students to a newly open window which is different in design from other course pages (see Figure 8).

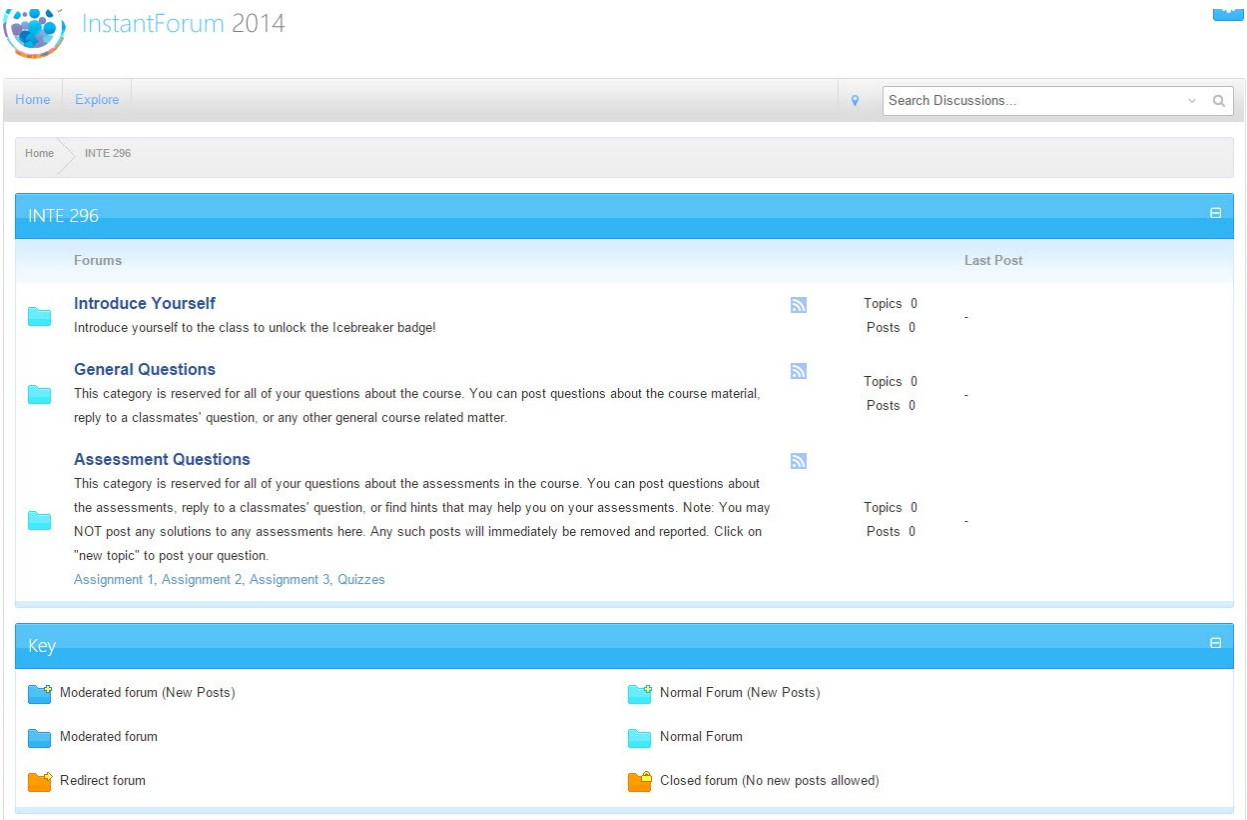

Figure 8: Discussion Board

It is an Instant Forum page where forums and discussion boards are hosted. Under the INTE 296 title students can join discussions on topics in the Discover Statistics course. There are three forums open for students' participation:

1. Introduce Yourself forum: Here students can introduce themselves to other students in the class, TAs, and the teacher. Participation in this forum awards students with the Icebreaker badge.

2. General Questions forum: Here students can ask any questions regarding the course and its content. They are also encouraged to answer other students' questions. Participation in this forum can be awarded by some Community badges and points.

3. Assessment Questions forum: Here students can ask and answer the questions concerning the course assignments. This forum is divided into four groups according to outlined assignments: Assignment 1 group, Assignment 2 group, Assignment 3 group, and Quizzes group. Participation in this forum is also awarded by some Community badges and points.

To the right side from the aligned forums students can see the number of topics and posts in the topics for each forum. The most recent posts are also visible. Every time a student goes into the forum, he/she can continue already existing topics or post new questions by clicking on New Topic button.

Resource Centre

The course's Resource Centre is the place where students find additional information on the material learned (see Figure 9).

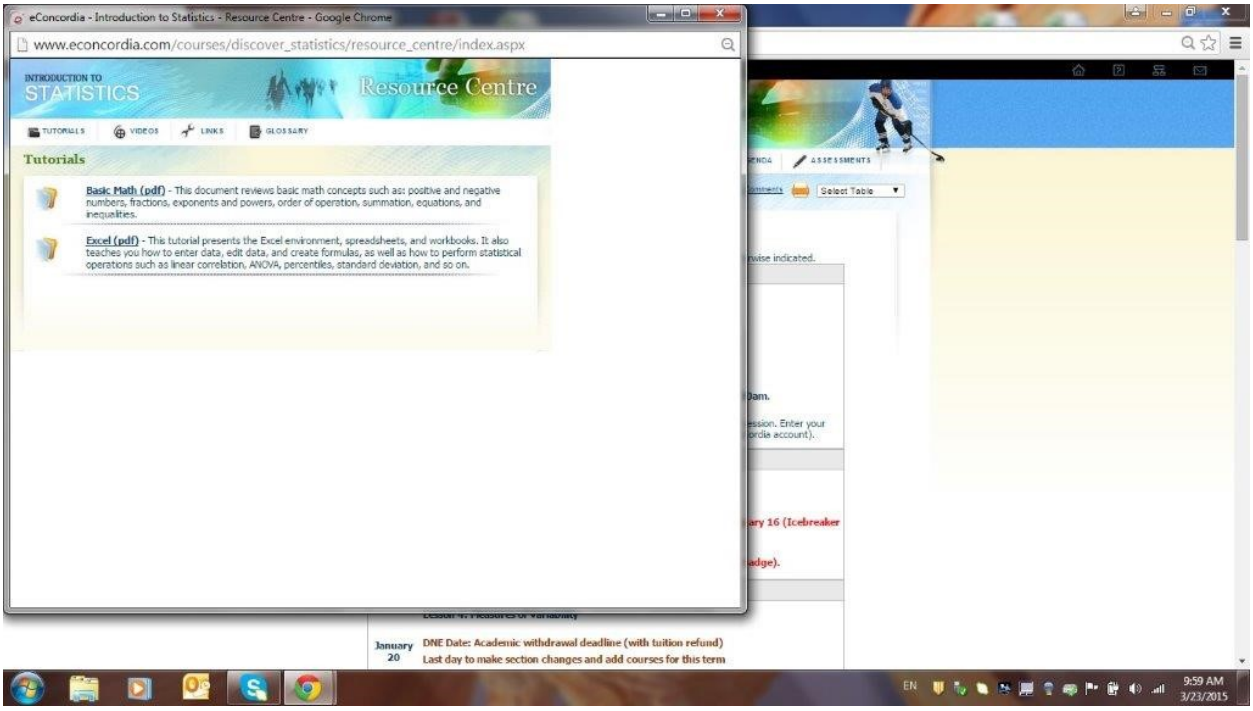

Figure 9: Resource Center

The Resource Centre is opened in a new small window in the left upper corner of the screen. Students can choose from four types of materials offered: tutorials, videos, links, and glossary.

1. There are two tutorials offered in the form of PDF files. Each of the tutorials is described in short on the Tutorials page.

2. There are no videos posted under the video title and the Video page does not open in the beginning of the course. The video recordings of Virtual Hours appear later and are uploaded to this location.

3. The Links page provides students with multiple hyperlinks to the statistical resources website. Every provided link has the title, and the short description on what can be found on the website. This page ends with the Bonus Buzz – a hidden award for the students who make the effort to know more.

4. The Glossary Links page provides students with rich online resources of statistic glossaries.

My Agenda

My Agenda is prepopulated with activities and announcements that refer to this course (see Figure 10).

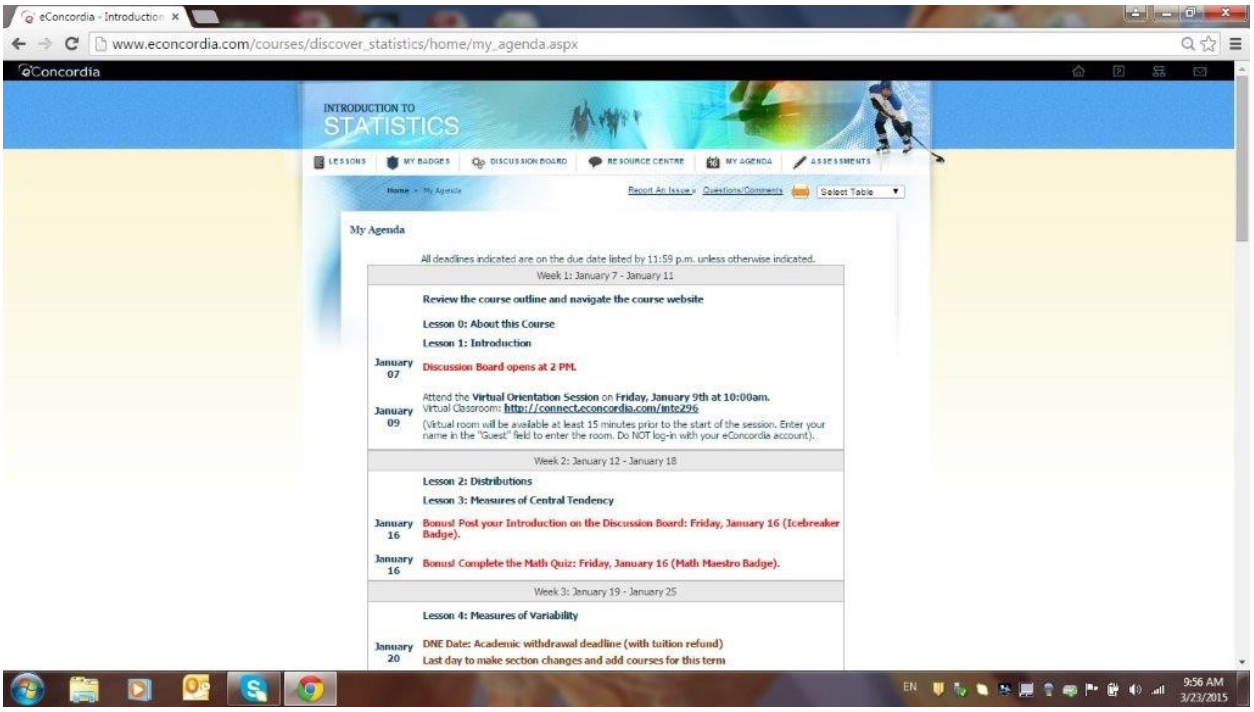

Figure 10: My Agenda

The whole course is represented week by week. The weeks are defined by numbers in order and the calendar dates. The Agenda uses a colour schema which includes three colours: blue, red, and brown. Blue is used with the bold font for the number of lesson scheduled, its topic, the date, and for the announcement of such events as Virtual Office Hours. Blue is used with the regular font for additional explanations and special notes. Red is used to highlight important events, due dates, and offered bonuses. Brown is used for Concordia important dates.

Assignments

Assignments are often the part that interests students from the beginning of the course. The information about this course's assignments is represented by three tabs in the left side menu. The first tab is Assignments (see Figure 11).

Figure 11: Assignments

Students can learn about all three assignments planned for this course. The main points in the provided information are what items should be included in submission, if group work is allowed, how to submit an assignment, and how to re-submit it. This is one of the features of this course: the assignments can be re-submitted after the TAs and/or the teacher provide a feedback on the work done.

The second tab is Sample Exams (for the topics in this and the following paragraphs see Appendix 8, Images 18 and 19). This page offers students to test their knowledge in two previous final exams that become samples in this course. The students are also provided with two tools to

be prepared for the exam: a Formula Cheat Sheet, and a Hypothesis Testing Flowchart. Both tools can be downloaded in a form of PDF files.

The third assignment tab is Quizzes. Quizzes guidelines page provides students with the information on the allotted time for quizzes and the way to save and submit them. The link to the quizzes can be found in the first line of the guidelines.

Tables

Another important resource can be found under Tables (see Figure 12).

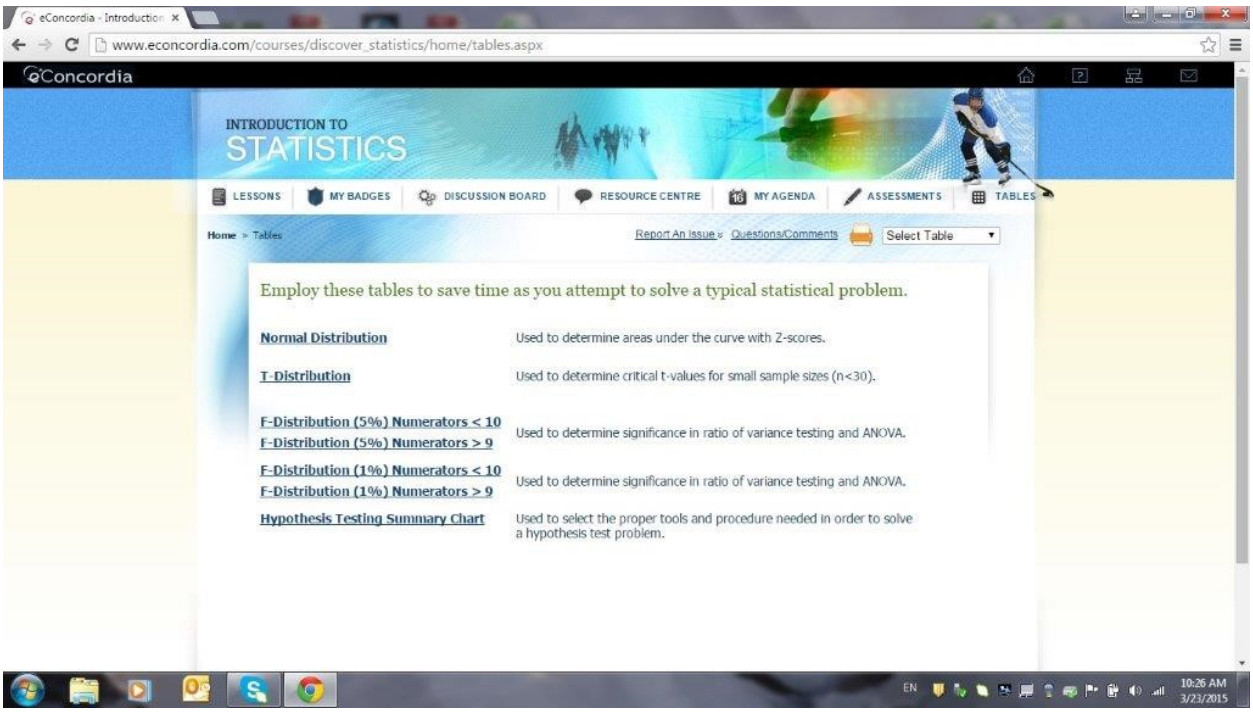

Figure 12: Tables

Here students can find tables that help them save time on finding solutions to typical statistical problems. Each table is represented by the hyperlink to its content and by the description of its purpose.

Detailed Results

This section presents the results drown from data collection.

Analysis of themes

All the transcribed interviews with student participants were uploaded to HyperResearch – computer software for qualitative data analysis. The interviews were coded. As a result, six major themes were identified:

1. Positive experience with the course: The majority of participants share the feeling that this course offers a very positive online experience due to its structure, gaming features, virtual office hours, and included self-assessment activities.

2. Negative experience with the course: There are some participants who claim the course could offer better online experience if it includes more face-to-face activities, and more actual reading materials.

3. Creativity defined: All the participants provide their understanding and definitions of creativity in general, teachers' creativity, and examples of online and face-to-face creative teaching.

4. Online creative teaching strategies: Although there was no provided definition of what creative teaching strategies are, all the participants agree the course Discover Statistics demonstrates a creative approach to teaching online. The students point out the most creative moments of this class, and share their ideas on the potential improvements for the course.

5. Comparing with other courses: Trying to identify online creative strategies used in the course, participants compare this course to other online classes they completed or are enrolled at the moment, and face-to-face classes in undergraduate programs.

6. It motivates me to…: All the participants share the feeling that teacher's creative approach motivates them a lot to log in and explore more often. Some of the participants mentioned they are also self-motivated, and only one student claims teaching online does not influence his motivation to learn.

Table 3 shows a comparison of the statements on each theme from three groups of students: 8 participants who do not have any experience in online learning, 7 participants who completed one to three online classes, and 2 participants who studied in four or more online courses. The table includes participants' statements in their own words. Each entry is not a unique comment made by a student. Although it is represented by one student's words, each entry depicts an idea shared by several other participants of the study.

Table 3: Statement comparison

Theme	Students with 0 online class experience (n=8)	Students with 1-3 online class experience (n=7)	Students with >4 online class experience (n=2)
Positive experience	-The paperwork is very clear. -We have practice activity or the exercise. -There are badges and activities that you can do. -He [the teacher] is using so many methods that we can learn. -There are many ways to ask questions and get answers. -The class is fun.	-It is a lot of fun. -Badges keep you always wanted to go online. -Lessons have a lot of good examples and explanations. -There are always people writing on the Discussion Board. -Office hours are like an extra helping tool. -He tries to put it in the layman's terms which	-The badges and all that extra work you can do to get bonus points was really encouraging. -Everything is very clear…there is no ambiguity in this class. -Able to do the assignments, get it corrected and re-submit…that encourages.

	-The teacher wants us to think -I like it because I am engaged. -The lessons are well organized. -You can do it at your own pace. -Office hours are great. -I like the fact that you can get bonus marks through doing extra activities. -Everything I need is there. -The Forum is very helpful.	is nice for people like non-math majors. -Available videos make it easier to understand. -You have more to do by yourself and it helps. -I can just log in pretty much everywhere, and do my stuff. -I like virtual hours because I do not have to show in the university. I am a very shy person. -It is easier to feel included at all the time of it. -Interesting activities enhance learning.	-Office hours are helpful. -We have assignments and quizzes almost every two weeks so we don't fall behind. -It is easier to go to the Forum where students will answer your questions. -I can watch them [office hour recordings] and listen to them after.
Negative experience	-The lessons can be unclear…more in the second block…towards lessons 11, 12, 13. -Not being able to get responses to my questions right away. -I need someone in front of me to teach me. -Do not find that the class he teaches so much as we teach ourselves. -The platform on the website is a bit childish.	-Type everything on mathematics in word is hard. -Playing everything in the quizzes is hard. -It is difficult to manage my time. -We can't really communicate with the teacher. -The lessons are a little bit abstract sometimes.	-It could have been more helpful.

	-The materials are not complete.		
Creativity	-It is everything. -It is taking your imagination and putting thing in place. -Freedom to choose, to be able to express without limitations. -Using different approaches to express yourself or to convey an idea. -Just something other, just go abstract. -Something that is different and adds extra. -Being original by doing things. -Make a picture out of words. -Something someone can think at a spare of the moment. -Using different methods to provide learning environment. -Build the environment that helps students to find their own answers. -Use different learning tools, tactics, and resources.	-Making something interesting and something fun. -Things to keep the attention of the person. -Find new ways of approaching the situation. -Change one thing, create it in another way for the person to understand it better. -Use your imagination to create something special. -Go outside of the box. -Understand people's opinion and generate your own opinion. -Come up with activity that is related to the subject. -Finding new ways to interest people. -Not to be boring and have everything enhanced. -Generate problems that trigger understanding. -Make class challenge oriented.	-It's just doing something different that others won't do and make it unique. -Creative teaching is finding different way other than the normal one to teach students.

	-Be dynamic, keep students' attention.		
Creative strategies	-Assignments, quizzes, and exercises we can do. -Use discussion board to get answers to the questions. -Give the opportunity as with badges and extra activities. -He makes himself available. -Use animation, videos, and images, not only stale notes. -Use real life context and examples. -New, relevant examples and questions, adapted, not taken out of the book. -Scavenger hunt for Bonus Buzz. -Building competition with the Leaderboard. -Virtual office hours and their records. -Present difficult assignment through gamification. -Creates the feeling of presence through different scenarios.	-Badges. -Educational games. -Office hours and their records. -A lot of diagrams, a lot of pictures, a lot of tables, and a lot of equations. -There are a lot of jokes. -He uses imagination to find fun examples. -He simplifies the charts. -He always repeats, so we can go over again. -Self-assessments.	-Bonus marks encourage you to do extra activity. -Little activities in the end of readings. -Clear organization of the course. -Games as a homework. -Leaderboard to see who is in the lead. -Badges to make you working, make you keep up with your work. -The class is really focused on us learning the material because I can re-submit the assignment.

	-There are graphics…it's easy on the eyes.		
A positive comparison with other courses	-They [another class] really don't do that [badges]. -In another class there are no office hours. -Not really interactive and the discussion board is very very structured. -They have Talk to library or they have like an online chat (for immediate answers). -It's [assignment] just words and words…sometimes it's multiple choice and that's it.	-It [another online class] was very boring. -It looks like you are on your own. -The teacher is not involved and helping you. -What I remember from it, it's just PDF files and readings.	-Some of them are very ambiguous. -You have like 50 pages to read of notes, a chapter, and you are supposed to know everything. -The other teacher is not really involved. -I forget the material after that.
Motivational effects	-It affects me a lot, though online classes are not my favourite. -I am not getting discouraged. -I am motivated because it's so easy to understand, and activities help solidify my learning experience. -The resources are definitely beneficial and he is doing as much as he can to motivate us. -It motivates me because I have more	-The teacher is being very enthusiastic. -He motivated me more because of the badges. -He didn't make it sound like it would be so hard…more like a welcoming feeling. -I would have taken the class like that if there were more classes offered like that. -It kind of appeals to people. -It doesn't feel like school, it feels like you	-100% yes, for sure. -His creativity pushes you to really wanna do as well. -I even thought through the whole semester how much he motivates us. -He cares about his students. -He enjoys teaching and he makes it simple.

	encouragement to do things and get extra points. That makes me learn the content. -Badges are motivational because they help me keep track of my work. -It motivates you if you see you're in the top 10 or top 20 on the leaderboard. -Bonus Buzzes are motivational because they make you go through the website and find information that could be helpful. -It has increased my motivation to learn but I am also self-motivated. -I am motivated by my personal reasons but no other than that. -It's always like a puzzle or a game so you [want to] do it.	are online playing a game. -It really motivates me to learn because of the badges and the assessments. -It really keeps me coming back to the site more often and feeling more competitive. -I find it's more enjoyable to have this layout and competition. -It keeps me coming back and learning. -The way he presents the course is more interesting. -If there is any different it would motivate me less. -Making self-assessments and doing the assignments really push you to understand each concept.	-I am focusing more on this class because it's more fun. -I don't feel like it's a duty…it's [going to] be interesting.

Positive experience with the course

Below are the analyses of each of the open coding category and their subcategories.

In the beginning of each interview the researcher found it important to establish a good connection with participants. This can ensure that students openly share their opinion and their ideas about the course. That is why the first question of the interview was chosen as follows: Can

you describe your experience in the online course “Discover Statistics”. Almost all of the participants express their liking of the course and their excitement about some of its features. Among all the course features, the students highlight clarity of explanation and activity directions, structure of the course and each lesson, gaming approach to activities, different options for interaction and conversations, and ability to study from anywhere anytime. Three students express their liking of the fact the material in the course and the activities are very clear and well explained. One of the students who does not have any experience in an online course said, “I find that the paperwork that we have is very clear and we do practice activity or the exercise. You really can understand all…all the formulas…” Another participant with experience in online learning simply stated the lessons are clear “…because they have a lot of good examples, a lot of good explanations”. These statements were summarized by the participant who said, “…everything is very clear…it’s black and white, it’s either you know it or you don’t know it, there is no ambiguity in the class either”.

Nine participants shared opinions on the importance of structure in an online course. Four of them stress that it is creative to find the appropriate structure that also allows a degree of freedom in learning and exploration. As one student said, “I like the lessons, I like that they are organized but you can do it at your own pace. I like the details in them”. The words “I like the set up” or “I like the structure” are repeated here and there in different interviews. The following statement sums it up very well:

> I guess the course isn’t so hard, so as I go through the problems…as I go through the questions…and actually go through the lessons, everything is pretty good [be]cause everything is well placed. You see you go through the topic, and you see a set of questions, and then there are some answers following which help a lot, and then again

> continues: next topic, a set of questions, and then the answers. So, it's actually very helpful, and it also helps that in the end there is a condensed review of everything. So, that's actually very helpful.

Another student mentions the assignment schedule is also very well planned because "we have assignments and quizzes almost every two weeks so we don't fall behind". It seems to be important for the participants to have a structure of the work they are doing and they are planning to do. Three students said they were very content with the structure and organization of the course. However, they were not sure if well-defined lesson and assignment structure "can be considered creative". According to these participants, it is a definite positive feature of the course. It seems that while considering good course structure to be very important, not all of the participants can clearly refer to it as a creative element of the course. Tham and Werner (2005) name course organization an important component of effective e-learning design. E-learning design is defined by Brown and Voltz (2005) as the "planning or working out of the e-learning resource" and is viewed mostly as a responsibility of instructional designers (p. 2). The small number of participants in this research does not allow the researcher to define whether well-organized lesson and assignment structure is perceived as an expression of teacher's creativity or as a positive outcome of e-learning design produced within instructor-instructional designer collaboration. Further investigation is suggested.

Aside course clarity and course structure, students talk a lot about the special approach the instructor of Discover Statistics took building his online class: gamification. All the participants seem to be very enthusiastic when discussing badges and the virtual statistic game included in the later lessons of the course. As one of the participants said, "I don't like much math but I really like the class with the badges and all the activities I find it really interesting. It

was more interactive than just a class with a teacher in front of you who said…explain everything". Another student does not mind extra work and learning because "with the badges and all that extra work you can do to get bonus points was really encouraging". Badges are important to the students for different reasons, such as engagement, fun, extra points to the grade, and competition. This is how one of the students feels about the badges:

> It was a lot of fun, actually, because he makes the course very interesting, so the fact that he includes badges in the course that's really something that keeps you always want[ing] to go online and want[ing] to sign on, complete it, get those extra five bonus points because it is really different B+ to A- or an A with those five bonus points.

The theme of the games and badges embedded into the course and course activities is raised by all of the participants throughout every interview. They believe these badges have an advantage bringing the difficult topics on statistics to students in an online class.

Discussing their positive experience in the online class, participants pay a lot of attention to the ability to stay in contact with their classmates, TAs, and the instructor, as well as the ability to ask questions and get explanatory answers as fast as possible. Even though several students mentioned they did not get their answers as fast as they would like to, most of the participants say they like multiple available options to stay connected to others. One of the students said, "he [instructor] is there to answer your question, there are TAs to answer your question. You can ask your friends or…there are many ways". TAs play an important role in the facilitation of the learning process in an online course. In their interviews, participants recognize TAs as an available resource to get information and as a support in some difficult tasks. However, none of the students in this study mentioned potential TA's input in creative aspects of the Discover Statistics.

One of the communication options is Forum or Discussion board. Here is what a student said about this way of communication online:

> There are always people writing on the discussion board whether it's to help you, whether there are questions, information, problems, and extra problems that could help. So, it's more… vivid, full of life than the other courses that I've taken online.

Another option for communication that is liked by the students is Office hours. The topic of Office hours seems to be a controversial one. Some of the students find them very helpful because they are recorded. As one participant said, "the thing is I can listen to them or watch them later and most of the students ask questions that I wanted to ask". Some of them cannot participate in live virtual meetings, and do not feel satisfied with using the recordings. However, most of the participants claim they "feel included all the time of it".

Ten of the participants express the idea that the availability of the course everywhere and any time benefits their learning and desire to participate in the activities. One of the students appreciate the opportunity to study in their own pace saying "in the positive things taking in count my schedule at my job I found it [online course] useful because it was me that had to find the time to make my own assignments". This opinion was shared by other participants.

Negative experience with the course

In general, it can be stated that 15 of the 17 participants felt enthusiastic about the Discover Statistics online course. However, there are some moments of negative experience shared in the interviews. Touching on this topic, participants discussed the later lessons were much more challenging and unclear than expected, that they did not feel instructor's presence enough, and personal inability to manage studying time.

As it is mentioned in the interviews, all the lessons are consistent in their structure; however, the participants said the later lessons are not as clear as the first ones. This is how one of the students sums the idea up:

> The only downside that I see in it that sometimes the lessons can be unclear. In the beginning, everything was laid out so perfectly, so easily, so easy to understand; however, I noticed that more in the second block, so it is lesson 13, I noticed that towards lessons 11, 12, 13 some of the concepts, they kind of skimmed over a little bit more. And then when I am doing assignments, I was…I was a little bit lost, because I didn't understand why they want to do us…want us find things but they don't give an example…

Two students find the later lesson slides are not very clear. They note the information included in the slides is somehow incomplete and they have to ask more questions and reach out for more help. This is what one of the participants said, "I think it's not really complete. When I need all the theory, there are some things missing for me to be able to answer all the questions, all the exercises". To eliminate this downside of the course some of the students propose using more Office hours, a textbook, and more videos on the topic.

Describing the moments when the students felt uncomfortable in the course, some of the participants mentioned they needed more instructor's presence to be able to better understand notions and relationships in statistics. As one participant said, "I am more a visual person, so I really think I need someone in front of me to teach me". Another student explains that it is preferable to have a teacher teaching face-to-face because a learner can "ask a question right away and…get response to the questions right away". One of the students with experience in

online learning explains that it would be more helpful to have some face-to-face interaction with the teacher at the moment of need:

> I find it's hard that we can't really communicate with the teacher besides, you know. The discussion board and email. It seems that we are not allowed to meet teacher face to face and that sort of thing. It is very rare, so…that's something that I think would help in terms of…I know that it's online class, may be a few meetings just because…even though it's a math class and they ask a question though the discussion board or through the email, I find it hard, it's like I find…it would be beneficial for us to maybe meet once or twice collectively.

Stating this desire to have collective meetings, participants do not give suggestions on how to organize it in the context of a 100% online course. The students, however, do not perceive lack of face-to-face interaction as a downside of the course but as personal preferences in learning.

Personal inability to manage studying time well was mentioned by the students who were enrolled in the other online or classroom courses, and who worked part or full time. These students do not refer to this challenge as a downside of the course; they appreciate that online courses give them flexibility in managing their learning time. They just mention it as a personal challenge they had to deal with. "I guess if I wouldn't work at the time or I would…I was less working, it would be perfect. But at the moment it's kind of difficult to manage it", - said a student with night shifts.

Creativity

After a good first contact with the participants was established, and they shared their positive and negative impressions of the course Discover Statistics, the questions of the interview

were focused on the term of creativity. The students provided their understanding of creativity in general and their understanding of the teacher's creativity in class. Many of the students provide examples that illustrate their opinion on how the teacher's creativity is represented in teaching.

The prevailing understanding of creativity in general is the ability of a person to be different, to act differently from other people, and to find different approaches to solve an issue. As one student said, "…the way you approach the situation…approach the situation differently than other people…" The same student believes everyone can be creative because "everyone's mind is different…" This opinion is shared by other participants, as well as the statement that everyone has imagination, therefore everyone can be creative. This is how another student defines creativity through imagination, "it [creativity] would include the word imagination…and special…it would be special, so…I think it would be the use of your imagination to create something special". Some students emphasize that creativity is not a static result of being different but a process of developing something unique. For one of the participants, creativity is a process of "changing one thing, create it in another way, so maybe the person can understand it better than in the way he didn't understand before". A definite degree of freedom as a part of the definition of creativity is present throughout most of the interviews. As one student said, creativity is "freedom to choose, to be able to…express on your own without limitations". Another student echoes that saying creativity is "an ability also to…understand people's opinion and generate your own opinion from it, and…an ability to…see the perspective differently". Although the views on the definition of creativity slightly differ among the participants, all of them shared the understanding of the creative person as being different, using imagination, thinking outside of the box, and using different approaches in problem solving.

Keeping in mind their own definition of creativity in general, the students were asked to narrow it down and provide their understanding of a teacher's creativity in a class. Their answers share the ideas that creative teaching happens when a teacher uses different approaches, keeps students' attention, and provides a stimulating environment. When asked to define what creativity in teaching is, 12 participants agreed that a creative teacher is one who uses different teaching methods in the class. Here is the statement of a student that sums up the shared idea, "in education I would say that creativity is using different methods to provide…to provide learning environment…" Some of the students went deeper trying to identify what a learning environment is and what the purpose of the teacher's creativity is. As one participant said:

> To me creativity in teaching is…for example, if I were a student struggling with the concept, instead of repeating exactly what you've just learned, you choose different approaches to explain it to me. So, either by explaining it with the different example, saying it with more approachable analogy, using pictures or any other…as a learning tool. That would be creative teaching.

Other students also emphasize the ability of an instructor to vary teaching strategies in order to make students understand the material is essential part of teacher's creativity. One of the participants stated, "I think definitely [creative teachers are] the teachers who are able to create the environment for students to…allow you to…find your own answers". Another student agrees that creative instructors are "someone [who] can think of [something] at the spare of the moment, you know, just to help up students understand some class materials".

Regarding creative teaching in the actual classroom and online, some of the students argue that helping someone to learn is not the only purpose of a teacher's creativity. It was exciting to hear that many participants believe a creative teacher not only "uses the imagination"

to make sure the students understand the material but he/she is the one who "catches their attention". In the words of the participants, teaching creatively means knowing "how to catch the attention and, you know, not force them [students] to do the homework but he [the teacher] would make them…make it easier for them to do it, and more…more fun". One of the ways a creative teacher catches students' attention is by challenging with authentic problems:

> …students are having difficulty to learn your lesson or something, concept, right then if he [teacher] could generate a problem that addresses that and understanding, then I think that would be very creative.

Others mentioned creative teaching examples were using real life examples, images, videos, and analogies.

Creative strategies

Explaining their understanding of what creativity in teaching means, the participants of the study gave some examples they experienced or could think of. It was natural to ask them about creative teaching strategies they found in the Discover Statistics online class. Most of the students expressed a lot of enthusiasm talking about this topic. Among all creative strategies experienced in the class, students name freedom of choice, increased interactivity, and context authenticity.

All of the students called badges the most creative teaching strategy online for different reasons. Some of the participants said it is creative because it gives them a degree of freedom and control over the learning process. Participants discuss multiple available "opportunities because of the badges and everything he [instructor] gives us, so we don't have to do this activity but if we do them we'll learn more". They agree that free choice to do the activity or not with the

competitive environment of the course motivate them to go through the activities and gain badges. It is also noted that to build different types of badges is a creative approach. This is how one of the students expresses opinion on Bonus Buzz – one of the hidden group of badges, “there are the badges but I think the fact that he put…I think he called those bonus buzz through…throughout the course, I think that was very creative on his part”. Another student highlights the competitive idea of course gamification that is supported by the badges, “the gamification is a point. I really like…you know, and I think the leader board and how it scores…I am a bit of competitive person, so I tend to get all the badges. That’s cool”.

Aside from freedom and control over own their learning, almost all of the participants named the diverse interactivity of the course as another creative teaching strategy. They name office hours, discussion board, badges and games as tools to boost the interactivity of the course. For example, one of the students said that her favorite part is “the online sessions where you have the teacher teaching, I guess, where he is explaining an assignment or a quiz, and we can directly interact with the teacher”. Another student echoes that, stating she finds very creative “extra activities that are sometimes linked to each class. That helps you go further in each one of those activities is often interactive. There is also…it still interactive which is office hours where he has the two screens making help to explain in live time what’s going on”. Another interactive creative strategy mentioned by the students is the implementation of games to demonstrate theory working on practice. There are lot of good things said about the virtual games “because even though they were… they are called games, they are actually educational…I found every time I was done a lesson if there are certain things I didn’t understand I went to play the game. It made me understand, ok, I do this because of that”.

The scenario for video games and some assignments are considered creative by the students for one more reason: their authenticity. As one of the participants said, "…the assignments are very like I said online, and it's a different scenario, different setting, makes you feel like as if we're actually there, I guess. Because some scenario, each activity has different scenario almost. One of them in this class was very boring but other ones were, like they make you feel like I am part of this company, and to do this". The students explain they find it very creative that the teacher built problems that include "scenarios as a background to a story, so you are like oh, ok, it makes me feel like I am actually a part of the problem, not just I just want to solve it because I need to learn it." Another student shared the idea that including real-life context is a very creative strategy to help learning, "for example, probability is something that I would love to see relationship with because some context is taken easily whereas the others are a little bit more abstract…but then if they change…they give me an example of money or models, then I am like ok, I understand it, you know. They just made it more…they made it easier to grasp". Adapted to the students' life examples and "not out of the textbook" problem questions raise interest and curiosity, as well as make it easier for the learners to understand the core of the problem, and to find a solution.

A positive comparison with other courses

During interviews, answering the questions, participants often compare Discover Statistics with other courses they were enrolled in. Some of them compare it with online courses, others compare it with face-to-face classroom experience. Comparisons touched upon course set up, teaching strategies, teacher's visibility and involvement, as well as general impressions and feelings about taking the course. For example, one of the students describe her experience comparing two courses:

> …the other class there are no office hours. If you have question, you can email it, that's it…there is no real interaction except the discussion board which is very, very structured that you have an actual topic question that's asked by the TA each week and you have to answer that specific question each week. So, it's not, there is no a lot of other stuff going on.

The students who have experience in online learning mention the feeling they experience in other online courses – the feeling that they were left alone and the teacher was unavailable. As one of the participants sums it up:

> The other course that I had, also another finance course; it was very boring. It looks like you are on your own, the teacher is not really implicated involved and helping you, and compared to this class…there are always people writing on the discussion board whether it's to help you, whether there are questions, information, problems, like extra problems that could help. So, it's more… vivid, full of life than the other courses that I've taken online.

One of the comparisons was particularly interesting because the student was taking another online course on statistics at the same time as the Discover Statistics class. As she mentioned, the material was somehow similar. She describes her experience in the following words:

> The other teacher is not really involved, he is not really there. We barely started classes in this session. And actually I am behind in that class. I have exams soon but I haven't studied. I am actually focusing more in this class because it's more fun.

The comparison of the courses or parts of the courses differ from student to student because it is based on the personal experience of each of them. However, all of the students mention that

Discover Statistics is more creative, interactive, and motivating than other classes they were enrolled in. Many of the students find it interesting and fun, and the activities are not a duty but a pleasant learning.

Motivational effects

With the exception for one student who said she is self-motivated and not very much motivated by the course itself, all of the study participants view Discover Statistics as a highly creative and motivating online course. This only participant said that she is motivated by her big goal to graduate. Because the Discover Statistics course is an elective for her program, she does not enjoy it a lot and wants to pass it with a good grade. All the other students felt it was difficult to pinpoint the main reason for them to be motivated and engaged. However, there were three shared explanations of course motivational effects: the teacher's involvement, games and badges, and the general learning environment.

The students mention instructor involvement and visibility in their answers to the questions about their positive experience in this course, about creative teaching strategies they observed, and about what motivates them to learn the course materials. The students agree the instructor is doing "everything he can to motivate" them. Among the motivating personal instructor's characteristics two of the students highlight the instructor's sense of humour and enthusiasm:

> …the teacher is being very enthusiastic, like when you hear him speaking and everything, he sounds… he is fun to listen to… he jokes and mix jokes, you know, he is on a human basis level. So, it is not like you are listening [to] someone who is kind of monotone, and not really explaining, and not very funny.

The students also mention the instructor's positive attitude towards their progress in class, and his high expectations that they will succeed. As one of the participants said, "…even though it's math, he didn't make it sound like it would be so hard. He didn't scare me away from it…more like a welcoming feeling". Another student appreciated the teacher cares about what and how his students learn, "…he cares about his students, right. And it shows that he cares by setting up this whole like…like what he did is very creative. And just setting this up at the whole just shows how much he cares…enjoys teaching. And he made it simple".

Another motivational feature of the course was mentioned to be badges and games. Badges and games were previously named the most creative teacher's strategy in this class, so it is not surprising to hear students name badges as very motivational. There are many reasons the badges are considered a motivational strategy, such as the feeling of being involved, the ability to get extra points for their learning, and the desire to find all of the hidden questions and prizes. For example, one of the students said, "It makes me go searching through the website to find the information that I think he found he thinks would be helpful to us because that's where he hid it. <…> it motivates you to look". But most of the participants agree that badges and games in this course create a competitive atmosphere which stimulates them to learn more, play more, and get higher in the leader board. Here is how one of the students sums up the motivational effects of the badges:

> You have no clue how the badges…they…like I am so competitive, I just want to do all of them, I am like that's far it's my favorite part, I like it. It's not even bothering me, it's just fun, and I go see the list you know where the name is, and I was second. And I was, "Oh my god", and I took a screenshot and everything…so, it really motivates me to go and just do the lessons to get the badges and everything.

Another student emphasizes the motivational effect of the badges occurs in the combination of the badges and the leading board, “with the badges and with your progress throughout the class there is a leader board…it gives you a measure of comparison if we can say. Such and such person is a level 15 and you are still at level 10…time to hurry up…they both work together”. Talking about the competition in the leader board and the class in whole, one of the students says it is important to know how other students are doing in the class, especially in an online class where you do not see others. Here is what she said, “It’s not the competition but I find it more engaging than other classes I have where it’s the list of assignments you need to finish over the semester, you never have any feedback how other students are doing”. Talking to the participants, it is easy to feel their excitement about badges and games, their joy if they are competitive enough, and their desire to get better among others.

Instructor’s involvement, and games and badges are not the only motivation the students feel being in the Discover Statistics course. Four of them talk about general lay out of the course, assessments, and self-assessments. In the interviews it is not rare to hear “it is fun”, “I am not frustrated”, and “the activities are always something new”. It was interesting to hear one of the students describing a moment when she showed this class to her friend. This is what happened:

> …my friend was like what are you doing, and she was really interested in it [be]cause she saw all the games and stuff, and she actually told me, “I would have taken the class like that if there was more classes offered like that”. Because it kind of appeals to people…it doesn’t feel like school, it feels like you’re online playing the game.

Three students say they are motivated to complete course assignments. They claim the instructor's creative strategy to let the students correct their work after it comes back with the feedback "makes them understand their errors and it's really helpful for learning."

Measured students' motivation

The researcher used the MSLQ to measure students' motivation at the end of the Discover Statistics online course. MSLQ is a self-report questionnaire that includes nine subscales totaling in 81 questions. Students give their answers on a 7-point Likert scale where 1 is not at all true, and 7 is very true. Pintrich, Smith, Garcia, and McKeachie (1991), in their Manual for the use of the Motivated Strategies for Learning Questionnaire, state it is possible to use separate subscales to perform necessary measurements. Given the scope of this study, following six motivation subscales were used: intrinsic motivation (four questions), extrinsic motivation (four questions), task value (six questions), control of learning beliefs (four questions), self-efficacy for learning and performance (eight questions), and test anxiety (five questions). Overall the participants answered 31 questions.

The data collected were analyzed between two groups of participants: nine students with online experience and eight students without online learning experience. The overall means and standard deviations for the 31 questions answered by all 17 students are $M = 4.79$, $SD = 0.19$. Overall means and standard deviations for the whole group of the participants in each subscale of the MSLQ are distributed in the following way:

Intrinsic motivation: $M = 4.75$, $SD = 0.78$

Extrinsic motivation: $M = 4.88$, $SD = 1.14$

Task value: $M = 4.66$, $SD = 1.27$

Control of learning beliefs: M = 5.16, SD = 1.55

Self-efficacy for learning and performance: M = 4.7, SD = 1.26

Test anxiety: M = 4.55, SD = 2.07

Table 4 depicts separately the distribution of means and standard deviations in the groups of participants.

Table 4: Mean and Standard Deviation of the MSLQ in groups of participants

MSLQ Subscale	Students without online experience: n = 8		Students with online experience: n = 9		
	M	**SD**	**M**	**SD**	***t* value**
Intrinsic motivation	4.69	0.65	4.81	0.39	0.46
Extrinsic motivation	4.81	0.88	4.94	0.72	0.33
Task value	4.65	0.95	4.67	0.84	0.05
Control of learning beliefs	4.88	1.06	5.42	1.13	1.02
Self-efficacy for learning and performance	4.55	0.78	4.84	0.99	0.67
Test anxiety	4.3	1.12	4.8	1.75	0.55

The data collected and presented in Table 4 suggests motivational level of the students in every subscale is positive. There are small differences in the data procured from the students without online experience and the students with online experience. To test for a difference between two groups, t-tests for every MSLQ subscale were performed (Creswell, 2012). Calculated *t* values show that there is no significant statistical difference between the groups in any subscale. The numbers slightly differ between these groups in the control of learning beliefs subscale. Control of learning beliefs subscale measures how much students believe their efforts to learn result in

positive outcomes. The results tentatively suggest that students with previous online experience feel they have more degree of control over their academic performance, and can make difference in their own learning.

Grades for teacher's creativity

At the end of each interview students were asked to grade the course Discover Statistics on teacher's creativity on the scale from 1 to 10 where 1 is not creative at all and 10 is the most creative online course they could think of. They were asked to take into consideration everything they said about the course, named creative teacher's strategies, their understanding of creativity, and their overall perception of this online experience. Figure 2 depicts the grades on teacher's creativity that students assigned to the course.

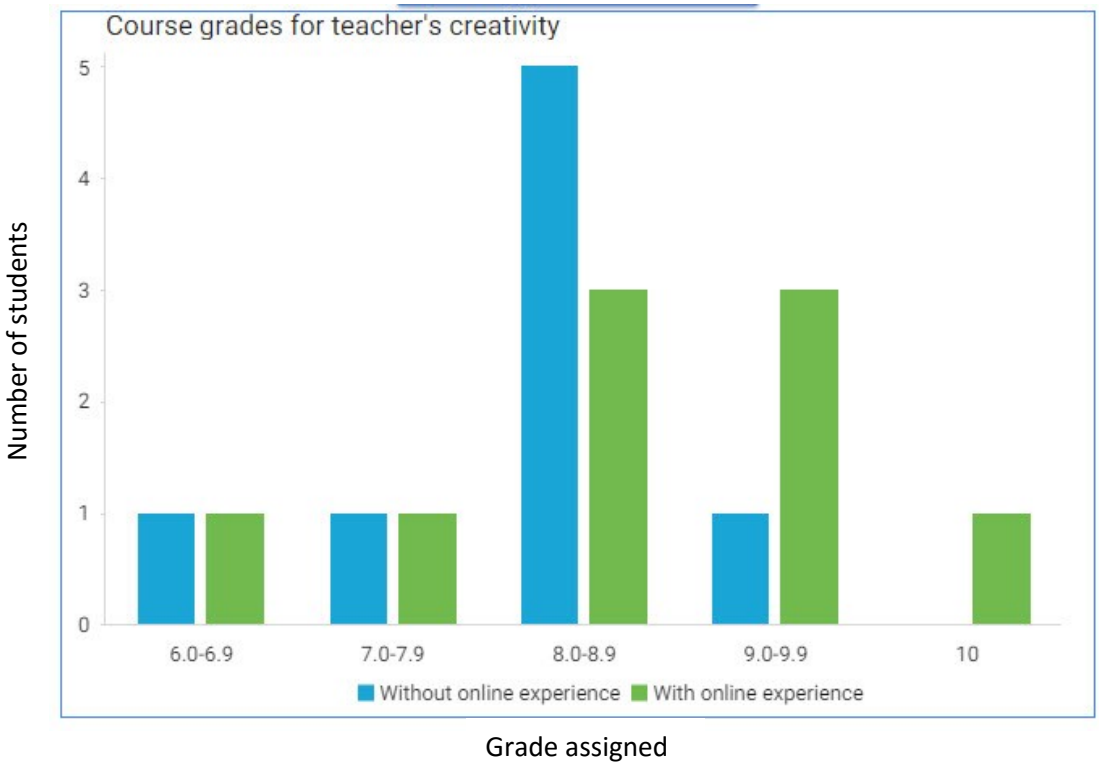

Figure 13: Course grades for teacher's creativity

Seventeen students assigned a grade to the course. From them, one student without online learning experience assigned a grade of 6, the lowest among the group. Another student, this one with online learning experience, assigned the course a 6.5. The highest grade available, 10, was assigned by one of the students with experience in online undergraduate courses. As it is presented in Figure 2, the grades for online teacher's creativity are very close between two groups of students: the students with online learning experience and the ones without. The average grade assigned by the students who were never enrolled in an online course is 7.8. The average grade assigned by the students who experienced online courses is 8.4. Even though the majority of the students without online experience assigned an 8 or higher, the graph shows students with online learning experience tend to give higher grades on teacher's creativity to the course Discover Statistics. This difference can be explained in two ways. Firstly, online experience provides students with the option to compare this course with others. The students can draw their opinion on teacher's creativity from this comparison. One of the students expressed this idea by assigning two different grades to the course, "If I compare to the other classes I've had, I would say the 10. If I compare to what it would be possible overall in terms of online teaching, I would say it's the 7". Secondly, students with presence or lack of experience set different expectations for how the online course can be set. This point requires further investigation to discover how students' expectations can influence their course creativity perception and online course satisfaction. The average grade for teacher's creativity in this course is calculated to be 8.1. While this can be discussed in descriptive terms, there is the other question of how many other courses the students have taken overall and in what context. Further investigation is suggested. In this research, the grade seems to be high considering the fact that students were not provided the exact explanation on what creativity and creative teaching

strategies are. This grade also shows there is some place for improvement that can make the course more creative in the eyes of the students. Potential creative teacher's strategies that can be improved or added were summarized under the theme Creative Strategies (see Table 3, p. 53).

Chapter 5 – Discussion

In order to answer the central question of the study, how creative online teaching affects students' motivation to learn in an asynchronous course, the researcher looked for the connections and interrelations among the themes defined in findings.

Coding paradigm

Core category

The grades on teacher's creativity students assigned to the course were explained by the students themselves, as well as were supported by their opinions expressed in the interviews. Basing on students' perceptions of the online teacher's creativity and the identified coding categories, the researcher built a coding paradigm (see Figure 3). According to Creswell (2012), coding paradigms show the interrelation between the categories in a qualitative study. The coding paradigm involves the visual representation of how casual conditions, intervening conditions, context, strategies, and consequences affect each other and the core category.

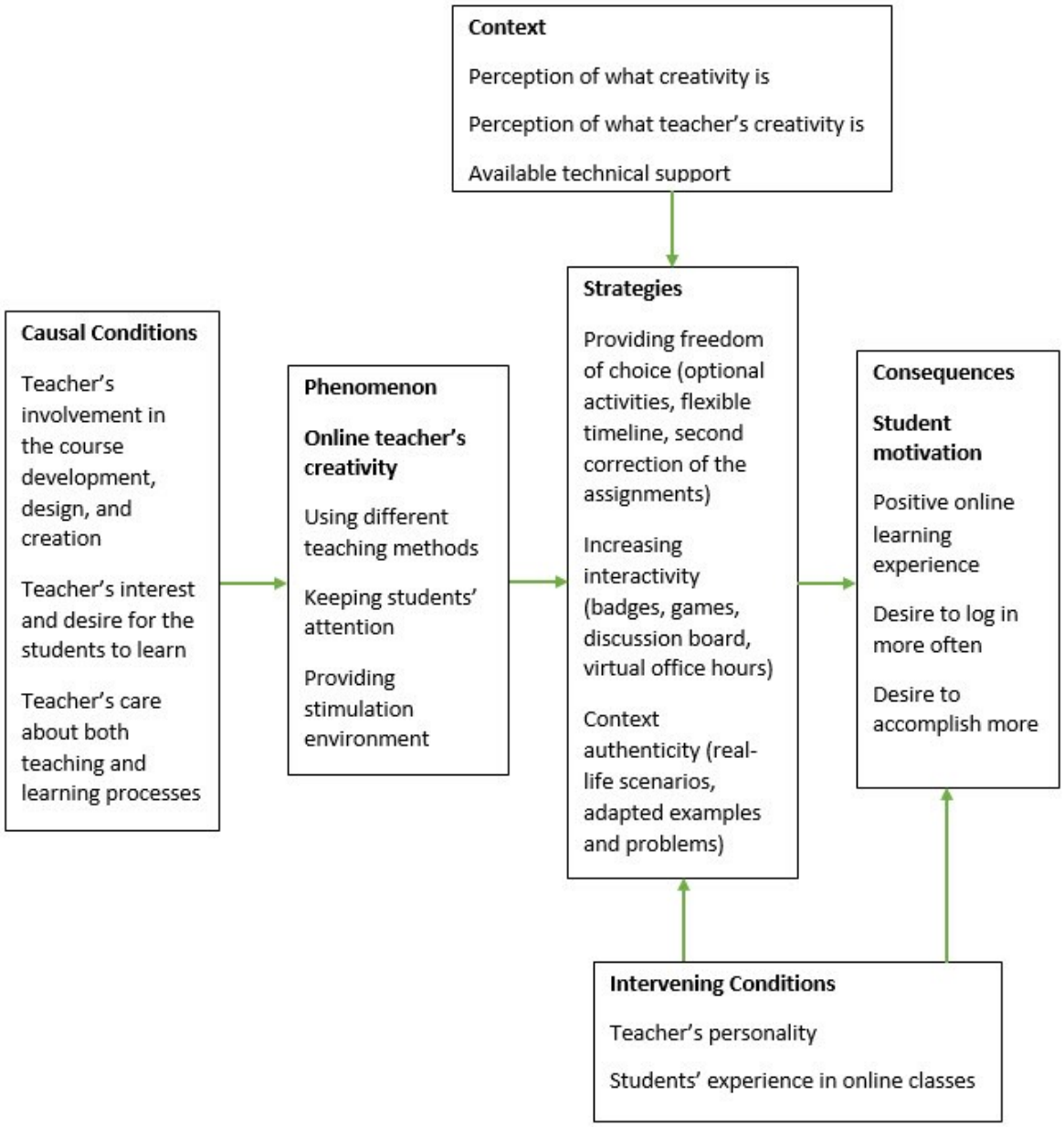

Figure 14: Coding paradigm - interrelation of themes in exploration of online teacher's creativity

The core category for this study was online teacher's creativity, defined at the beginning of the study, as well as confirmed by the data collected from the research participants. Through the interviews it was specified that students perceive online teacher's creativity as using different teaching strategies to help them learn, keeping their attention, and providing them with the

environment that is engaging and stimulating. Online teacher's creativity was also chosen as a core category following Strauss and Corbin's criteria (as cited in Creswell, 2012).

The figure above represents the model yielded by axial coding. For the description of axial coding process, refer to the Data Analysis Approach sub chapter, page 32. The following paragraph presents an overview of the coding paradigm presented above. The detailed description of every part of the paradigm will follow.

The coding paradigm figure shows that the central phenomenon, online teacher's creativity, is influenced by three causal conditions: overall teacher's involvement in the course creation, teacher's interests in student learning, and teacher's care about teaching process and its effectiveness. In the scope of this research, teacher's online creativity resulted in a number of creative teaching strategies that provide freedom of choice, increase interactivity, and support context authenticity. During data collection, the participants identified the specific conditions and general contextual conditions that influence the development of creative teaching strategies. The specific conditions list perceptions of what creativity and teacher's creativity are, and the availability of technical support as the context in which creative strategies are developed. Both teacher's personality and students' online learning experience can influence the views on creative strategies. They can also influence the outcomes of employing these strategies, namely positive online experience, desire to log in and accomplish more, and as an overall result – increased student motivation to learn.

Causal conditions

Collected data suggested that online teacher's creativity is influenced by several causal conditions. First, according to the students' perceptions, instructors become creative online if they are involved in the course's development, design, and creation. Only an instructor who feels

course ownership and is concerned with the quality of the online course will try to find creative ways to present and conduct it. However, an online course is not created by one person – an instructor. This process can include instructional designers, graphic designers, and software developers. The collected data does not suggest if their involvement influences the online teacher's creativity. On one hand, the students expressed their opinions on the course as a whole without noting if the inclusion of a virtual game or implementation of the badge assessment system was instructor's idea. On the other hand, the participants did not evaluate and mention in any way slide structure or game and badge graphic and technical design as a creative approach. In their interviews they focused on their own understanding of teacher's activity in the course.

The participants evaluated instructor's online presence and his behavior in the course. Answering the question on the reasons for naming the instructor and the course creative, they say they feel instructor's positive attitude toward their success. One of the students explained that the teacher probably came to the idea of self-assessment for students because he wanted them to learn, understand, and remember material. Another student mentioned that the teacher created "real-life" and "funny" examples for them not only to solve the problem but to help understanding and to make it stay in their memory. It seems that the students believe that it is important for the teacher to be interested in their success in order to be creative. This leads to the second condition that influences this core category - the instructor's interest and desire for the students to learn.

Aside from the instructor's interest in student learning success, there is a third causal condition that influences the online teacher's creativity. It is the instructor's care of the teaching process itself. The study participants attracted the researcher's attention to the parts of the course when they interacted with the instructor directly – Virtual Office Hours. Both the students who

interacted with the instructor synchronously and the ones that listened to the Office Hour recordings mentioned teacher's engagement in explaining problems and his desire to find the ways to present potential solutions. One of the students said she felt that "he [instructor] enjoys what he is doing" that is why he was able to find different approaches to different learning problems. Another student stated that the instructor's passion for teaching was "contagious" and obvious in the real-life problems in the lessons and virtual games. It seems that the students believe that it is important for a teacher to be passionate about teaching in order to be creative in it.

All three named causal conditions are proposed to be initial conditions for the online teacher's creativity to evolve.

Strategies

The online teacher's creativity results in a number of strategies that are called creative teaching strategies. There is a variety of creative teacher's strategies used in Discover Statistics. They can be viewed in both course structure and content presentation. All of them were clustered into groups by their goals. Based on the data collected, it is possible to say the online teacher's creativity results in creative strategies that aim to provide freedom of choice and control over students' own learning, aim to increase interactivity, and aim to provide context authenticity. Students share their value of having freedom of choice, be it in what activity to do first or in the decision to skip it. They appreciate the fact there are different options and the variety of training exercises and problems to solve. Participants also feel a degree of freedom offered talking about the flexible timelines for problem solving and class accomplishment. However, they did not say anything about strict deadlines for the assignments or finals. Another strategy that was called creative is the available option for the students to correct their own assignment after it was

submitted and came back with the instructor's feedback. Students feel they have control over their own learning and they learn more by going over their mistakes and understanding what the problem was.

Strategies that provide freedom of choice are interrelated with the strategies that increase course interactivity. Using badges, games, discussion board, and virtual office hours, the teacher creates a strong connection with his students. According to the participants, badges, games, and leader board build a competitive environment that stimulates them to choose more activities to accomplish and more learning problems to solve. One of the students even calls the badges "the trick" the teacher uses to make them learn and explore. Non-structured discussion board and virtual office hours create the channel through which the teacher-TA-student communication thrives. Recognizing the potential of the virtual office hours, most of the students agree to improve the grade on the teacher's creativity in this course it is suggested to use virtual hours more often and in different times of the day for more people to be able to attend.

Aside from strategies that increase interactivity in the course, participants agree a creative instructor uses authentic context throughout the course. Students observe content authenticity in the examples and problems when the teacher used real-life scenarios and adapted examples. Later in the course, when students collect enough knowledge on statistics and are able to apply this knowledge, they are offered to play a virtual game. This game recreates a real-life scenario on the factory. Students found it was very creative of the instructor to build this game and present course theory in practical applications. Students stated the teacher's creativity is also expressed in presenting authentic problem explanation at the moment of need, for example, to answer a student's question during virtual office hours.

Context

Defining strategies that are used by a creative online instructor, it is important to recognize some of the contextual conditions that influence the understanding of what creative teaching strategy is. It should be taken into consideration that the participants were not provided with the definition of creativity or teacher creativity. Instead, they were asked to provide their own understanding of these two terms. They were also asked to identify the creative instructor's strategies through the prism of their understanding of what creative strategy in teaching is. Even though the students' definitions of creativity did not differ much, each of the participants named the teacher's creative strategies in the context of personal perception. For example, those students who define creativity as the ability of an instructor to use different methods, in general highlighted optional activities and the second correction of the assignments as creative strategies. Those students who perceive creativity as thinking out of the box, imagining new ways, and creating something different, in general name badges, virtual games, and virtual office hours as creative strategies. One of the students mentioned the instructor would not be able to create the course without the other professionals involved. This opinion was not touched upon by other participants. However, it seems to be valid context for creative strategies because there is a team of professionals who was working on this online course. It is suggested to further explore how much the skills of these team members can affect the online instructor's creative strategies.

Consequences

The online instructor's creative strategies lead to definite outcomes. As this research is focused on the motivational effects of the teacher's creativity, only these potential outcomes were explored. According to the participants, the outcomes of employing creative strategies in an online course are represented by increased student motivation. Most of the students rate creativity in Discover Statistics high, and they state the creative teacher's strategies build

students' positive online learning experience. Comparing to other online and face-to-face undergraduate courses, all of the participants except one emphasize they do not feel the exercises and problems are a duty. They find them entertaining, they feel like being inside the game, and they feel eager to be better and increase their knowledge. Several students did not express such an excitement; however, they confirm that most of the time they are willing to log in more often and to accomplish class activities.

In order to triangulate the findings, different means of data collection were involved. The participants were asked to answer the questions in the MSLQ. Their answers provided an overview on the student motivation at the end of online course. There are no provided norms for the MSLQ results analysis. Pintrich, Smith, Garcia, & McKeachie (1991) argue this questionnaire is intended to be used at the course level to report different levels of motivation or strategy use. Due to the small number of participants, the researcher used descriptive statistics in order to highlight the basic features of data. Using descriptive statistics method, means and standard deviations show quantitative description of students' intrinsic motivation, extrinsic motivation, task value, control of learning beliefs, self-efficacy for learning and performance, and test anxiety. The results show both groups of the participants are motivated to learn the materials of the course which supports the findings from collected qualitative data.

Intervening conditions

There are two intervening conditions that influence the identified strategies: the instructor's personality and the students' experience in online learning. Most of the participants emphasized the power of an instructor's personality in his creative approach towards teaching online. They noticed the instructor's excitement of being in the class, his desire to make students learn, and his support in their progress. One of the students said the instructor's excitement and

love of the subject is contagious, and it stimulated her to go to class more often and find answers to her questions.

Another intervening condition is the students' previous experience of being in an online course. There are two well-identified groups of students in this study: students with online learning experience and ones without it. Even though the answers to the interview questions do not differ much between these groups, there is a slight difference between grades assigned for teacher creativity by students from different groups.

Both intervening conditions, the teacher's personality and the students' experience in online classes, affect strategies as well as student motivation as an outcome. The instructor's personality influences the choice of this or that teaching method and it influences student motivation by showing the enthusiasm about the topic and using humour. The students' online experience influences students' understanding of what online creativity is, therefore, it influences recognition of the creative strategies used in an online class. It influences motivation when comparing to other classes in which a student was enrolled.

Comparison of findings with existing studies

Focusing on the central question of this research, how creative online teaching affects students' motivation to learn in asynchronous online courses, the collected data provides answers to the three outlined sub-questions. The findings are compared with existing studies in the following part.

How do students define creative teaching? Though it was acknowledged in the beginning of the study it is challenging to define creativity, a common students' understanding of creative teaching as "being different", "using imagination", "producing something new", and "using different approaches" emerged from the collected data. This supports Amabile, et al. (1984) and

Trunnell, et al. (1997) understanding of a creative product or creative idea as something that is new and used the first time. It also confirms the understanding of some researchers (Donnely, 2004; Morrow, 2010) that imagination plays a big part in being a creative teacher.

Imagination plays a crucial role in the creative teaching process. Imagination is the force that brings innovative ideas and teaching approaches that are considered creative by the students. Sawyer (2004) in his article "Creative teaching: Collaborative discussion as disciplined improvisation" envisions creative teaching as a creative performance that requires the performer's imagination. The author emphasizes the negative impact of scripted instructions on teachers' creativity. Students in this study mention that the subject of the course Discover Statistics uses a specific structure and framework, potentially limiting the teacher's ability for creative expression. However, they agree that the teacher's imagination and willingness to take risks by being different empowered him to perform as a creative instructor.

According to the students' personal definitions, creative teaching is a process that involves finding and using new and different approaches to reach students' understanding of the subject. These views on teacher creativity support Trunnell's, et al. (1997) description of a teacher's creative process that should include the ability to change as one of the main factors associated with it. Silver (1997) echoes this with his research on creativity-enriched mathematics instructions. He emphasizes that flexibility in finding solution methods is both creative and fosters creativity in learners. The instructor's ability to use different teaching methods, especially during virtual office hours, and to be spontaneous and flexible in changing them to find the one that helps understanding is one of the criteria that students in the study used to describe creative teaching.

Students' definitions of creative teaching and the examples they used to demonstrate their understanding partly support Sternberg's (2006) Investment Theory of Creativity. Sternberg's study focuses mostly on the nature of creativity and the improvement of instruction to teach students to think creatively. His theory says a creative person has to possess six interrelated resources: intellect, knowledge, styles of thinking, personality, motivation, and environment. Following Sternberg's (2006) idea that "…one needs to know enough about the field to move it forward" and drawing their examples from the Discover Statistics course, students in this study recognize the teacher as being creative because he possesses and is able to provide knowledge that is well-organized and divided into pieces they can easily learn (p. 89). Students in the study state that creativity in teaching is based on the teacher's deep knowledge of the subject. Without this knowledge one is not able to find different approaches explaining a solution to a problem.

Aside of the knowledge, students highlight the instructor's personality as one of the important segments of the teacher's creativity. The search for the impact a personality has on creativity in different domains was summarized by Barron and Harrington (1981) in their meta-analysis of the 15-years research concerning Personal Indicators of Individual Creativity and Innovation. The scope of the studies included Art, Literature, Music, Science and Technology, and multiple other domains. Barron and Harrington (1981) concluded that in general, researchers recognize the existence of a fixed set of personal characteristics and qualities in creative activity. Some of the qualities, such as broad interests, high energy, ability to resolve anomalies, and intuition, were mentioned by the students of this study as the personal characteristics of the teacher that made his teaching creative. The personality attribute to being creative has been supported by various research such as that conducted by Sternberg & Lubart (1991, 1995). They state this attribute includes willingness to overcome obstacles and willingness to take risks. Even

though study participants did not say anything about overcoming obstacles, some of them recognized that it was a little risky, therefore creative at the same time, to make gamification a vital part of the Statistics course.

Together with knowledge and the instructor's personality, study participants highlighted the instructor's motivation as an essential part of creative teaching. They say that a creative instructor is the one who is motivated to teach, shows his interests to reach every student, and engages in the learning process. These findings support those of Horng, Hong, ChanLin, Chang, and Chu (2005) who explored who creative instructors are and what creative teaching strategies are. The researchers found that the main aspects of creative teaching are both hard work and personal motivation to excel. Similar views on motivation as an essential part of creative teaching are shared by multiple other researchers, such as Sawer (2011), Bonk (2006), Clayton et al. (2010), Henshon (2010), and Hunter (2011).

Although the participants of this study did not touch upon the role of a teacher's intellect, style of thinking, and the provided environment in creative teaching, parts of Sternberg's (2006) Investment Theory of Creativity, they are definitely reflected in the words of the students when they speak about the teacher's creativity brought by his knowledge, personality, and motivation.

What are some of creative teaching strategies utilized in an online environment? Doug Lemov (2012) in his book "Teach like a champion: A practical resource to make the 49 techniques your own" provides teacher practitioners with concrete, specific, and actionable teaching techniques. The author believes that teachers can be taught to be great. Even though Lemov's (2012) ideas to transform the children's education focus mainly on teaching techniques that occur in face-to-face classrooms, it is observed by the participants of this study that many of these techniques can be found in online teaching. Offered by Lemov (2012), such strategies as good course/lesson

organization and its communication to the students, well-shaped supportive teaching environments, the material broken down into small blocks, and an inclusion of short activities throughout the lessons are considered to be creative teaching strategies in the Discover Statistics online class. Other teaching strategies, such as repetition in practice questions, or exciting opening of the course/lesson, were not mentioned by the students in this study.

There are many teaching strategies that were considered creative by the students; they have been described in the Findings and the Discussion parts of this paper. The list can grow or shrink depending on the course in scope and personal preferences of the participants. To find out if there are general principles in defining strategies as creative, the findings of this study were compared against John Savery's (2005) set of successful online instructors' characteristics, VOCAL. According to the researcher, online teachers who are VOCAL (Visible, Organized, Compassionate, Analytical, and Leader-by-example) promote "a supportive, challenging, constructive, rigorous and effective instructional environment" (p.1). Even though Savery (2005) offers a set of techniques for online teachers to become VOCAL, it depends on teacher's creativity to implement them in effective ways. According to the participants in this study, the instructor in the Discover Statistics course is visible enough because they can reach him if needed and they have some online interaction with him; he is organized because he provides clear directions and always has extra materials if requested; he is compassionate because he understands students' needs and is very approachable; he is analytical because he ensures the students always receive timely feedback and enforces the achievement of learning outcomes; he is a leader-by-example because he models best teaching practices and supports the online learning community.

The VOCAL approach is mostly about the effectiveness of the learning process. What does it have to do with creativity? Creativity is a tool that makes a teacher VOCAL and therefore effective. De Sousa (2007) explored the relationship between creativity and effectiveness in teaching and came to the conclusion that creativity and effective teaching can be considered similar concepts. Another researcher, Simplicio (2000), investigating how to become an effective instructor, names creativity as one of the main learned skills that leads to effectiveness in teaching. In his book "Qualities of effective teachers", Stronge (2007) also emphasizes the role of creativity in teacher effectiveness.

Taking into consideration this research and believing that teacher creativity will lead to effective teaching, it was investigated if the creative strategies named in this research support the VOCAL approach.

There is no doubt the visibility of the instructor is absolutely critical for students adopting an active role in the learning process. Savery (2005), as well as other researchers (Hayashi, Chen, Ryan, and Wu (2004), Kehrwald (2008), Piezon and Ferree (2008)) link teacher visibility to the concept of social presence that is absolutely crucial in online environments. Many students in this study mention it is important for them to see and feel that the teacher knows them and is present in their learning. According to Savery (2005), teacher visibility online can be public and private. In the case of this research, the participants support the importance of the following public strategies use: broadcasting emails to all the students, updated messages (in the form of the leader board that lists students' progress in gaining badges), and TA's comments in the forum made in a timely manner. The Discover Statistics course also adds one more creative strategy to this list, improving teacher visibility: virtual office hours that are valued very highly by most of the participants. Private teacher visibility seems to be lacking in the observed course. The

students expressed their concerns about emails from the teacher or TAs that come later than expected and are not enough for a student to feel the teacher is present for every one of them.

Savery (2005) offers an extensive list of suggested strategies for teacher and course organization. Considering organization of an online class a key point in teacher creativity and effectiveness, some other researchers (Conrad and Donaldson, 2011; Kop, 2011) add their strategy suggestions to this list. Not all of them are present in the Discover Statistics course, and some of them, being included in the course, are not mentioned by the participants because they are not considered creative. These are creative strategies that align with the VOCAL framework: available self-assessments before and after the lesson, thorough syllabus, well-divided material, and clear instructions. One of Savery's (2005) strategies is to create topics to guide forum discussions. This strategy is not only deemed uncreative in this study but is considered restrictive and not helpful. In reality, the participants consider it creative for the teacher to give them freedom to build and guide the discussions on the subject they are interested in or the ones they have difficulties with, as they experience it in the Discover Statistics course.

Different researchers have varying opinions on the question of how to build an effective forum in an online class. For instance, Carr-Chellman and Duchastel (2000), trying to find a model of an ideal online course, state that threaded by a teacher, forums "lead to the formation of true learning communities, within which adult students share their real world experiences and learning outcomes, thereby profiting all participants within the conference" (p. 236). Other researchers, Cheng, Pare, Collimore, and Joordens (2011), highlight that a voluntary online discussion forum improves students' course performance without reference to the teacher's level of control over threading. On the contrary, Drexler (2010) insists that teacher-controlled threading in the forum provides a limited point of view on the subject, and students' autonomy in

forum creation can positively affect personal learning. According to the findings in the present research, Drexler's (2010) opinion represents a valid point; however, more exploration on forum effectiveness is suggested.

One of the participants expressed her concern that, in general, she feels instructors in universities are not as much interested in students' success as high school teachers. She also said the instructor in the Discover Statistics course proves this to not be accurate because of the compassion and interest in student learning results he showed. Savery (2005) thinks that teacher compassion matters a lot to online students. Multiple other studies uphold the point that effective online teacher support suggests feelings of empathy and compassion (Eom et al. (2006), Baran et al. (2011), Hunter (2011), Gibson (2010)). The participants in this study say that they can always contact the instructor directly but it does not refer to the teacher's creativity. Additionally, no student touched upon personal issues and how the instructor addressed them. This point needs to be explored more in a study with a bigger sample size.

Managing online environments, a teacher should be analytical as suggested by Savery's (2005) VOCAL framework. The main strategy is to provide clear expectations and guidelines for assessments, as well as frequent and various assessments. The participants of this study talked a lot about creativity in building assessments in the course. They agreed that they experienced all the strategies suggested by Savery (2005). However, the findings suggest the instructor found a creative way to provide students with opportunities to be analytical and take responsibility over tracking and evaluating their own learning results by providing self-assessments, embedded quizzes and problems. The instructor also gave the participants the opportunity to resubmit their assessment tasks after the first review. The value of this instructor's approach is supported by Nicol and Macfarlane-Dick's (2006) model and seven principles of good feedback practice.

According to the model, a good feedback practice clarifies goals and criteria, facilitates reflection, provides quality information on learning, encourages dialogue about learning, positively motivates and boosts self-esteem, and provides information on how to shape learning process. The participants appreciate the opportunity to go over the provided feedback, reflect on their own mistakes and learn while looking for correct solutions. They also find it motivating to improve their learning and performance.

It is believed the teacher sets the tone of the instruction and learning process as a whole. Savery (2005) agrees with it, implementing strategies for an instructor to be a leader-by-example in his VOCAL framework. According to the researcher, it that for the instructor to be effective, it is important that they perform their own introduction, follow up with promises, and model the right way to act in the class. Neuendorf, Waters, and Duong (2011) echo Savery (2005), exploring teacher presence in online courses and emphasizing that being a leader-by-example extends teaching presence and, therefore, enhances engagement. The findings of this research refines suggested strategies for a teacher to be a leader-by-example offering some ways, such as being enthusiastic while speaking about the subject, and using humor for both explanations and real-life examples.

What is the essence of the experience for students in creative online environments? One of Lemov's (2012) suggested teaching strategies found a very strong support in the collected data: "the fun that brings students together while progressing toward your learning objective". In the case of the Discover Statistics course, students feel very motivated by the embedded elements of gamification. The concept of gamification and its perception as a creative element in educational environments has been of great interest for about a decade. Multiple researchers found that gamification may be used for both fostering collective creativity and creative self-expression, as

well as for increasing student motivation to learn. Hamari, Koivisto, and Sarsa (2014) reviewed literature of 24 empirical studies on gamification in education. Their review shows gamification provides positive effects on student motivation if it is implemented in the context of learning. All the studies on education in the literature review confirm that students demonstrate increased motivation and engagement in the learning tasks. Twenty-four reviewed studies are just a small part of the research done on the effects and implementation of gamification. Nicholson (2012), for example, introduces his theory of meaningful gamification in educational settings. He states that for gamification to be effective it should include the concept of situational relevance and motivational affordance. These two concepts together mean that for gamification to be motivating, it should consider "the background that the user brings to the activity and the organizational context into which the specific activity is placed" (p. 3). This point is strongly supported by the students from the Discover Statistics course. Many of them highlight the idea that it is very engaging to assess their knowledge playing the game that is built on a life-based scenario and that offers to solve problems using statistical theoretical material.

Aside from the situational relevance and organizational context, another study by Landers and Callan (2011) emphasizes the necessity of explicitly recognized rewards to motivate learners. These rewards should be meaningful for the defined social context. The researchers came to the conclusion that "the more explicit this recognition among the learner's peers, the stronger the motivation to continue will be" (p. 419). Denny (2013) also explored the effect of badge-based virtual achievements on student engagement. Using a large scale randomized control experiment, the researcher states that "students enjoyed being able to earn badges, and indicate a strong preference for having them available in the user interface" (p. 763). This positive effect was observed in badge-based achievements in the Discover Statistics course. Most

of the students report increased motivation seeing their results in the leader board, increased feeling of competitiveness, and increased desire of bigger numbers of accomplishments in learning.

Gamification is only a part of the course's designed tactics that motivate and engage students. The list of motivational strategies can be very extensive and can vary depending on multiple variables. To demonstrate the essence of experience students had in the Discover Statistics course and its effects on their motivation to learn, the findings were compared with existing studies within the ARCS model. The ARCS model was designed by Keller ad Suzuki (2004). ARCS stands for Attention, Relevance, Confidence, and Satisfaction that are necessary targets for motivational e-learning design. Keller and Suzuki (2004) offer the steps that guide an instructor, instructional designer, and developers in building motivational online courses. In the framework of actual research, the tactics used in the Discover Statistics course will be reviewed for responsiveness to the model targets.

Gaining and sustaining a learner's attention is the first target of the ARCS model. Research on issues of attention in an online course is constantly growing. Picciano (2002), Pan and Sullivan (2005), Swan (2001), and other researchers support the importance of using often and various techniques in an online course. They name graphics, interactions, interesting problems, puzzles, and mystery solving. Most of the participants of the actual study state that the teacher often kept their attention by using small real-life and humorous problems embedded in the lessons, and directing the search for badges and buzzes with the hints personal score feedback. They also state their attention increased later on when their knowledge was tested in a virtual game.

Another target of the ARCS model is relevance. Keller and Suzuki (2004) pay special attention to students' perception of instructional requirements and goal-setting. The researchers say online learners are more willing to set meaningful educational goals if they see the content is relevant to them, thus they become intrinsically interested. Frymier and Shulman (2009) as well as other researchers (Pintrich & DeGroot (1990), Chen & Jang (2010), Clayton et al. (2010)), emphasize that increasing content relevance enhances students' motivation. Most of the students in the Discover Statistics course characterized its content as relative to real life. Some of the students, however, said that even though it is relative to real life situations, they cannot relate it to their future profession because this course is not compulsory for their program and they took it as a complementary one. It seems that in this situation learner goals may be extrinsic and are driven by getting badges and course credits.

Aside from attention and relevance, building confidence is another ARCS model requirement. Keller and Suzuki (2004) highlight that confidence is built when a student establishes positive expectancies for success and attributes it to their efforts and not to luck. It is not possible to evaluate tactics taken to approach building learners' confidence because of a very small sample of participants. More extensive research is suggested.

According to Keller and Suzuki (2004) the last element in the ARCS model, satisfaction, is not necessary for motivating students to learn but it is necessary for building positive feelings about learning experience. The concept of satisfaction and its relation to motivation to learn interests both researchers and teaching practitioners. Roca and Gagne (2007), for instance, used a self-determination theory perspective to understand e-learning continuance intention. Their study suggests that increased satisfaction with the learning experience influences a student's intention to continue learning and take another online course. Concannon, Flynn, and Campbell (2005)

explored other effects of having positive feelings about online learning. They argue that satisfaction with online learning helps build positive attitudes towards technology for both teachers and students. In the framework of this research, participants' satisfaction with the Discover Statistics course is relatively high (8.1 of 10). Some of the students expressed their intentions to take courses online; however, none of the participants talked about continuing to learn statistics if it is not required.

Study limitations

The current study has a few important limitations. The biggest limitation of the study is its sample size. There are only 17 participants: two entered the study in the first term and 15 agreed to participate in the second term. This limited sample size leads to several consequences. First, study demographics show two well-defined groups of participants: students who did not have any online learning experience and students who have some e-learning experience. The last group can be further divided into students with little (1-3 courses) online learning experience and with extensive (4 or more courses) online experience. Because of the small number of participating students, it is difficult, however, to have well-defined findings for each of these groups and compare them with each other. It also seems impossible at the moment to see if there are any differences in findings with regards to the age, gender, ethnicity, education, mother tongue, and employment status of the participants. Finally, the small sample challenges the notion that this group was representative. Interesting data examining creativity were gathered, but the view of the 17 may not be shared by the other members of the cohorts.

Another study limitation is the availability of only self-reported data. Though the data provides insights on the phenomenon that cannot be obtained in any other way, it is possible that participants lack introspective abilities or understanding and interpretation of some questions.

The participants in this study were also given a rating scale that was intended to measure the level of overall course satisfaction. Even though the rating scale was chosen to be similar to the grading scale in the undergraduate program, it is possible that the students interpret each of the scale points differently.

Implications for future research

From the point of view of theory there are several research directions to be taken into consideration. First, there is a need to focus on the collaborative work between teachers, instructional designers, and course developers. As the online course is a product of this collaboration, it seems there could be potential restraints or wider opportunities for a teacher to use creative strategies. One should explore how collective work with instructional designers and course developers can affect teacher's creativity online.

Second, there is a need to understand if students' perceptions of the online teacher's creativity can differ within various demographic groups and depends on the previous students' experience in online learning. The answer to this inquiry will widen the knowledge of how different groups of students define teacher creativity and potentially make the list of creative strategies more diverse. It can potentially lead to the definition of the creative strategies that are valued among most of the demographic groups.

Third, there is a need to observe students' perceptions of the same strategies used in different online classes that are taught by other teachers. Does their understanding of a creative teacher's strategy change? If yes, what does the recognition that the strategy is creative depend on? Are the students still motivated by the same strategy used in different contexts? A longitudinal study could provide answers to all these questions.

Lastly, there is a need to compare teachers' understanding of creativity in an online course with the students' one. This comparison will help find common grounds in building an engaging e-learning experience that would be considered motivational by both teachers and learners. The result of this comparison can have wide practical implications.

Overall significance of the study

The findings of this research suggest that particular online teaching strategies are considered to be creative by the students and motivate them to learn in an online course. The current study offers the following implication for practice: universities should consider implementing creative strategies into their e-learning framework, based on the appreciation showed by students. This study shows that students recognize being motivated by enhanced teacher's social presence, implemented gamification, and built virtual reward system.

Educational institutions continue to expand their online course offerings in an effort to engage wider audiences in academics. It is clear, creativity within the online environment will play a vital role in the success of these programs, both on behalf of the institutions and their students.

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Appendices

Appendix 1: Email to the course professor

Dear Dr. Devey

My name is Natalia Matusevscaia and I am a Graduate Candidate for the Master's in Educational Technology at Concordia University. For my Thesis project, I am investigating how creativity in online teaching affects undergraduate students' motivation to learn. The research is a qualitative study that aims to explore students' understanding and perception of online teachers' creativity and its effects on their motivation to learn, as well as gather information regarding instructors' instructional design strategies.

You are being approached because your course has been identified as exemplary with regard to creative pedagogy. I would like to analyze the online course and, where possible, conduct interviews. If student participants were to be involved, I propose conducting online individual and/or focus group interviews. Students would also be asked to complete the Motivated Strategies for Learning Questionnaire. Teacher participants would be asked to answer questions in telephone interview(s). Time required on your part is extremely flexible, and minimal, if need be. All the collected data will be confidential. Informed consent from potential participants will be solicited online. Freedom to withdraw at any time without negative consequences is of course ensured.

The results of this study aim to inform instructional designers, teachers, and administrators about strategies that make online learning effective and sustainable.

With this letter, I am looking for your consideration of participation in this study. If you have any questions about the research and its organization, including the nature and extent of your and/or your students' role, I encourage you to contact me:

Principal Investigator Natalia Matusevscaia
Department of Education of Concordia University
Tel: (514) 222-3892
email: n_matuse@education.concordia.ca

or Supervisor Dr. Richard F. Schmid
Professor and Chair of the Department of Education of Concordia University
LB579, 1455 Maisonneuve West
Montreat, Quebec, H3G 1M8
Tel: (514) 848-2424 Ext. 2001
email: schmid@education.concordia.ca

Thank you for your time and cooperation.

Natalia Matusevscaia

Appendix 2: Teacher consent

Teacher consent to participate in the research "Creativity in teaching online affects undergraduate students' motivation to learn"

I understand that I have been asked to participate in a research project conducted by Natalia Matusevscaia of the Department of Education of Concordia University (Tel: (514) 222-3892, email: n_matuse@education.concordia.ca) under the supervision of Dr. Richard F. Schmid, Professor and Chair of the Department of Education of Concordia University (LB579, 1455 Maisonneuve West, Montreal, Quebec, H3G 1M8, tel: (514) 848-2424 Ext. 2001, email: schmid@education.concordia.ca)

Purpose
I have been informed that the purpose of the research is to explore how online students perceive teacher creativity and its motivational effects.

Procedures

I understand that the researcher will observe the online class in order to collect firsthand information on the strategies the teachers use and the creative approach they endorse. Some pictures and video recordings will be collected.

I understand that I will be asked to participate in the telephone interviews.

Risks and benefits

I understand that the research may require some of my personal time.

I understand that for my time and insights, I will be rewarded with the list of some teachers' strategies that will be recognized as creative at the end of the study.

Conditions of participation

I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences.

I understand that my participation in this study is CONFIDENTIAL.

I understand that the data from this study may be published.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) _____

SIGNATURE _____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator

Natalia Matusevscaia
Graduate Candidate
Department of Education
Concordia University
Tel: (514) 222-3892
Email: n_matuse@education.concordia.ca

Or the Principal Investigator Supervisor
Dr. Richard F. Schmid
Professor and Chair
Department of Education
Concordia University
LB579, 1455 Maisonneuve West
Montreat, Quebec, H3G 1M8
Tel: (514) 848-2424 Ext. 2001
Email: schmid@education.concordia.ca

If at any time you have questions about your rights as a research participant, please contact the Manager, Research Ethics, Concordia University, 514.848.2424 ex. 7481 oor.ethics@concordia.ca

Appendix 3: Email to potential participants

Dear students

My name is Natalia Matusevscaia, and I am a Graduate Candidate for the Master's in Educational Technology at Concordia University. For my Thesis project, I am investigating how creativity in teaching online affects undergraduate students' motivation to learn.

The research is a qualitative study that aims to explore students' understanding and perception of online teacher creativity and its effects on their motivation to learn. You are being approached because you are enrolled into the online course Introduction to Statistics. I would like to analyze this course and conduct interview with the students. You will be asked to share your experience during online interviews and will be asked to complete Motivated Strategies for Learning Questionnaire. Informed consent from potential participants will be solicited online.

The results of this study aim to inform instructional designers, teachers, and administrators about strategies that make online learning effective and sustainable.

With this letter, I am looking for your participation in this study. You can find the consent form attached. When signed, please send it to n_matuse@education.concordia.ca

If you have any questions about the research and its organization, do not hesitate to contact

Principal Investigator Natalia Matusevscaia
Department of Education of Concordia University
Tel: (514) 222-3892
email: n_matuse@education.concordia.ca

or Supervisor Dr. Richard F. Schmid
Professor and Chair of the Department of Education of Concordia University
LB579, 1455 Maisonneuve West
Montreal, Quebec, H3G 1M8
Tel: (514) 848-2424 Ext. 2001
email: schmid@education.concordia.ca

Thank you for your time and consideration.

Best regards

Natalia Matusevscaia

Appendix 4: Student consent

Student consent to participate in the research "Creativity in teaching online affects undergraduate students' motivation to learn"

I understand that I have been asked to participate in a research project conducted by Natalia Matusevscaia of the Department of Education of Concordia University (Tel: (514) 222-3892, email: n_matuse@education.concordia.ca) under the supervision of Dr. Richard F. Schmid, Professor and Chair of the Department of Education of Concordia University (LB579, 1455 Maisonneuve West, Montreal, Quebec, H3G 1M8, tel: (514) 848-2424 Ext. 2001, email: schmid@education.concordia.ca)

Purpose

I have been informed that the purpose of the research is to explore how online students perceive teacher creativity and its motivational effects.

Procedures

I understand that the researcher will observe my participation in the online class in order to collect firsthand information on my engagement. Some pictures and video recordings will be collected.

I understand that I will be asked to participate in online interviews to provide insight into how students understand teacher creativity and what their experience in an online class is. These interviews will be recorded for further analysis.

I understand that I will be asked to complete the Motivated Strategies for Learning Questionnaire at the end of the course.

Risks and benefits

I understand that participation in this research will require some of my personal time.

I understand that for my time and insights I will be rewarded with the list of some teachers' strategies that will be recognized as creative at the end of the study.

Conditions of participation

I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences.

I understand that my participation in this study is CONFIDENTIAL.

I understand that the data from this study may be published.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) _____

SIGNATURE _____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator

Natalia Matusevscaia
Graduate Candidate
Department of Education
Concordia University
Tel: (514) 222-3892
Email: n_matuse@education.concordia.ca

Or the Principal Investigator Supervisor
Dr. Richard F. Schmid
Professor and Chair
Department of Education
Concordia University
LB579, 1455 Maisonneuve West
Montreat, Quebec, H3G 1M8
Tel: (514) 848-2424 Ext. 2001
Email: schmid@education.concordia.ca

If at any time you have questions about your rights as a research participant, please contact the Manager, Research Ethics, Concordia University, 514.848.2424 ex. 7481 oor.ethics@concordia.ca

Appendix 5: Demographic survey

Please choose the appropriate answer for the following questions.

What is your age?

- ☐ Under 18 years old
- ☐ 18-24 years old
- ☐ 25-34 years old
- ☐ 35-44 years old
- ☐ 45 or older

What is your gender?

- ☐ Male
- ☐ Female
- ☐ Trans
- ☐ Other

What is your ethnicity?

- ☐ Caucasian
- ☐ Hispanic or Latino
- ☐ Black
- ☐ First Nationals/Aboriginal
- ☐ Asian/Pacific Islander
- ☐ Other

What is the highest degree or level of education you have completed?

- ☐ High school graduate, diploma or the equivalent
- ☐ Some college credit, no degree
- ☐ Trade/technical/vocational training
- ☐ Associate degree
- ☐ Bachelor's degree
- ☐ Master's degree
- ☐ Professional degree
- ☐ Doctorate degree

What is your employment status?

- ☐ Employed
- ☐ Self-employed
- ☐ Out of work and looking for work
- ☐ Out of work but not currently looking for work
- ☐ A homemaker
- ☐ A student
- ☐ Military
- ☐ Retired
- ☐ Unable to work

What is your mother tongue?

- ☐ English
- ☐ French
- ☐ Other

What is the number of online classes completed before?

- ☐ None
- ☐ 1-3 classes
- ☐ 4 or more

Thank you for your participation in the survey.

Appendix 6: Individual Interview Protocol

Date:
Interviewees:

The purpose of this research is to explore how online students perceive teachers' creativity and its motivational effects. We collect data by observing the class, by interviewing focus groups, and by receiving the answers in Motivated Strategies for Learning Questionnaire. All the collected data is confidential.
In this focus group interview we ask you to answer several questions. The interview is being recorded for further analysis. The interview will take no more than 30 minutes.

Questions:

7. Please, describe your experience in this online class.
8. How do you define creativity?
9. How do you define creative teaching?
10. What are some creative teaching strategies you observed and experienced in this class?
11. To what extent do you consider this class creatively taught?
12. How does teacher's creativity in this class effect your motivation to learn?

Thank you for your participation in the focus group interview. The recorded data is confidential, and will be safely stored. We will contact you if we need more information or clarification.

Appendix 7: Motivated Strategies for Learning Questionnaire

Motivated Strategies for Learning Questionnaire

Please rate the following items based on your behavior in this class. Your rating should be on a 7-point scale where 1= not at all true of me to 7=very true of me.

Items	1	2	3	4	5	6	7
In a class like this, I prefer course material that really challenges me so I can learn new things.							
If I study in appropriate ways, then I will be able to learn the material in this course.							
When I take a test I think about how poorly I am doing compared with other students.							
I think I will be able to use what I learn in this course in other courses.							
I believe I will receive an excellent grade in this class.							
I'm certain I can understand the most difficult material presented in the readings for this course.							
Getting a good grade in this class is the most satisfying thing for me right now.							
When I take a test I think about items on other parts of the test I can't answer.							
It is my own fault if I don't learn the material in this course.							
It is important for me to learn the course material in this class.							
The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.							
I'm confident I can understand the basic concepts taught in this course.							
If I can, I want to get better grades in this class than most of the other students.							
When I take tests I think of the consequences of failing.							
I'm confident I can understand the most complex material presented by the instructor in this course.							
In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.							
I am very interested in the content area of this course.							
If I try hard enough, then I will understand the course material.							
I have an uneasy, upset feeling when I take an exam.							
I'm confident I can do an excellent job on the assignments and tests in this course.							

I expect to do well in this class.							
The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.							
I think the course material in this class is useful for me to learn.							
When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.							
If I don't understand the course material, it is because I didn't try hard enough.							
I like the subject matter of this course.							
Understanding the subject matter of this course is very important to me.							
I feel my heart beating fast when I take an exam.							
I'm certain I can master the skills being taught in this class.							
I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.							
Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.							

Appendix 8: Course characteristics screen shots

Image 1: Lesson 0 – Course navigation

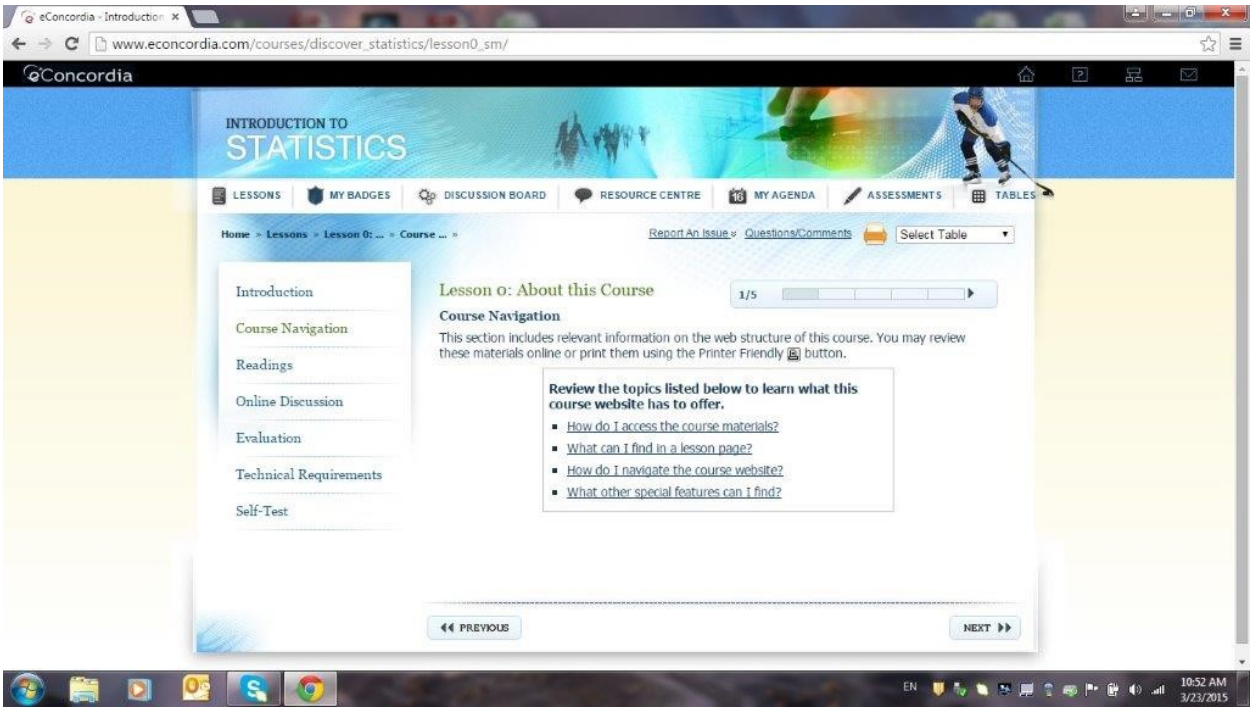

Image 2: Lesson 0 – Readings

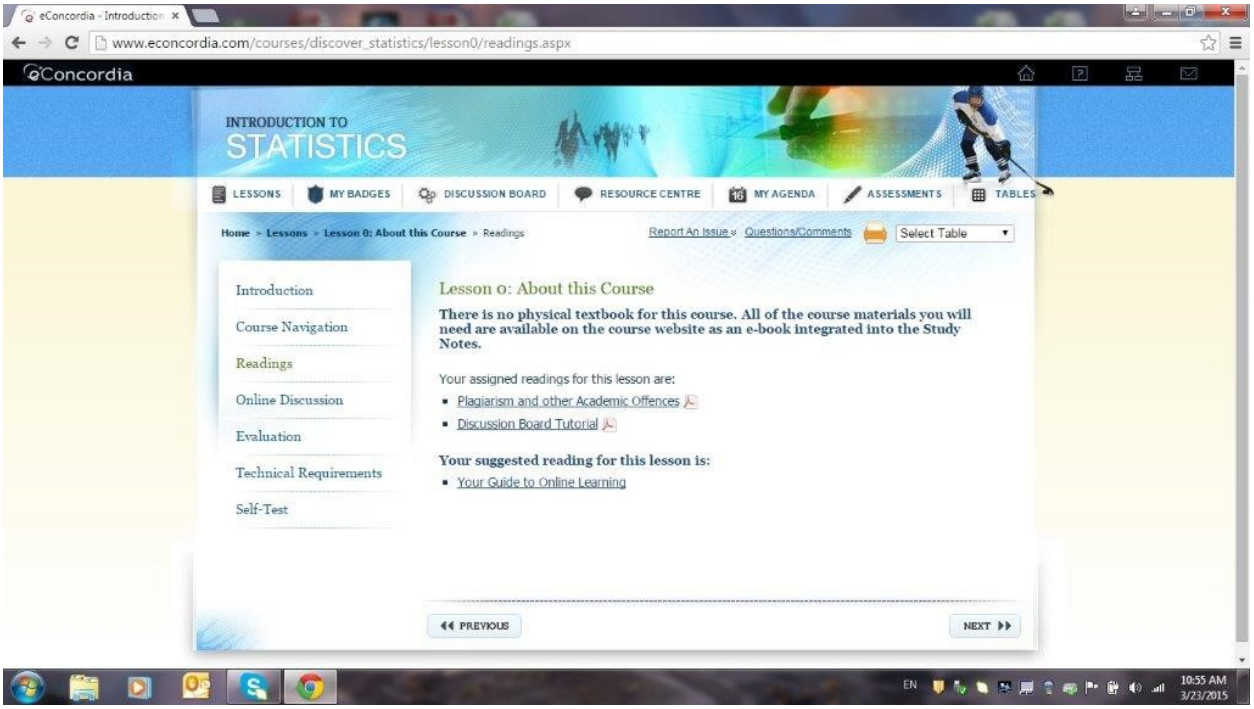

Image 3: Lesson 0 – Online discussions

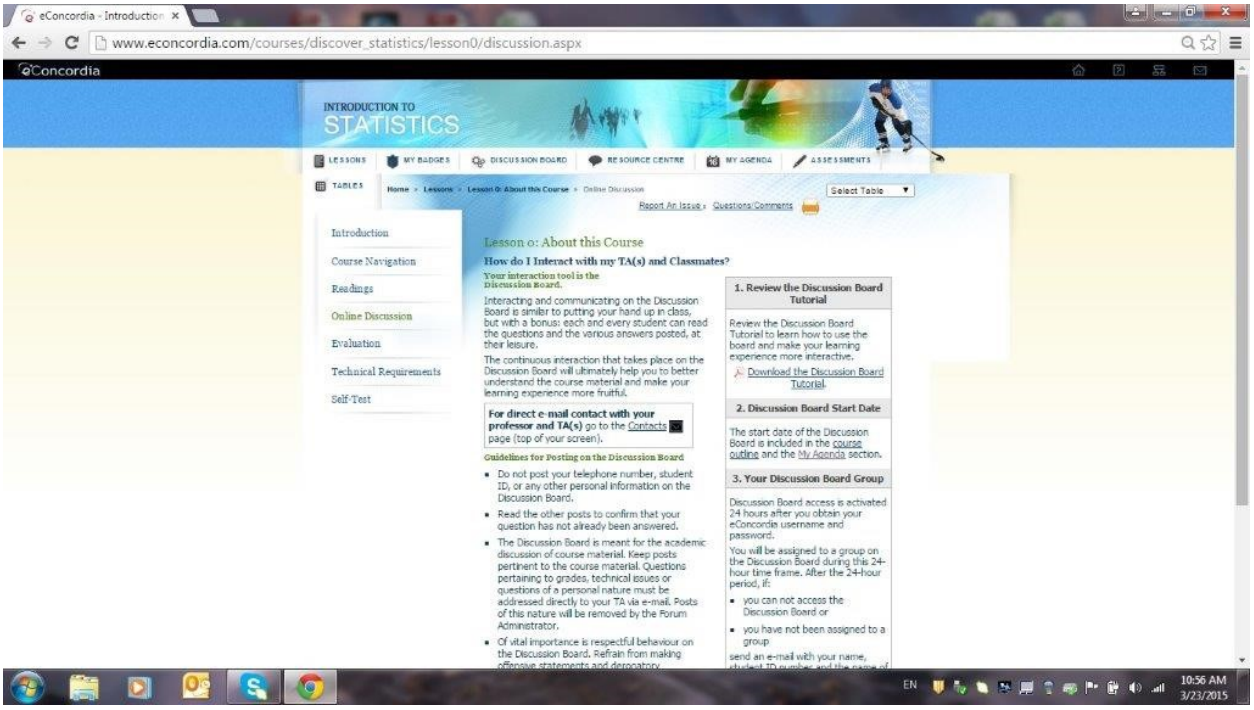

Image 4: Lesson 0 – Evaluation

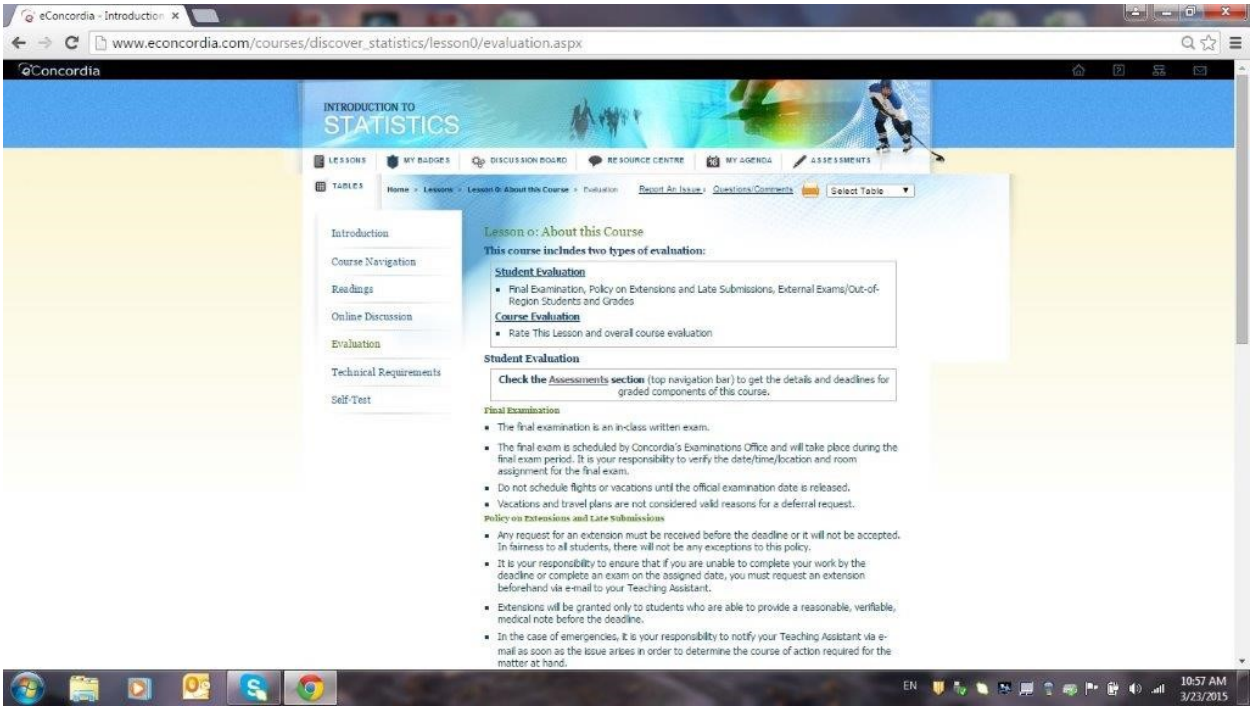

Image 5: Lesson 0 – Technical requirements

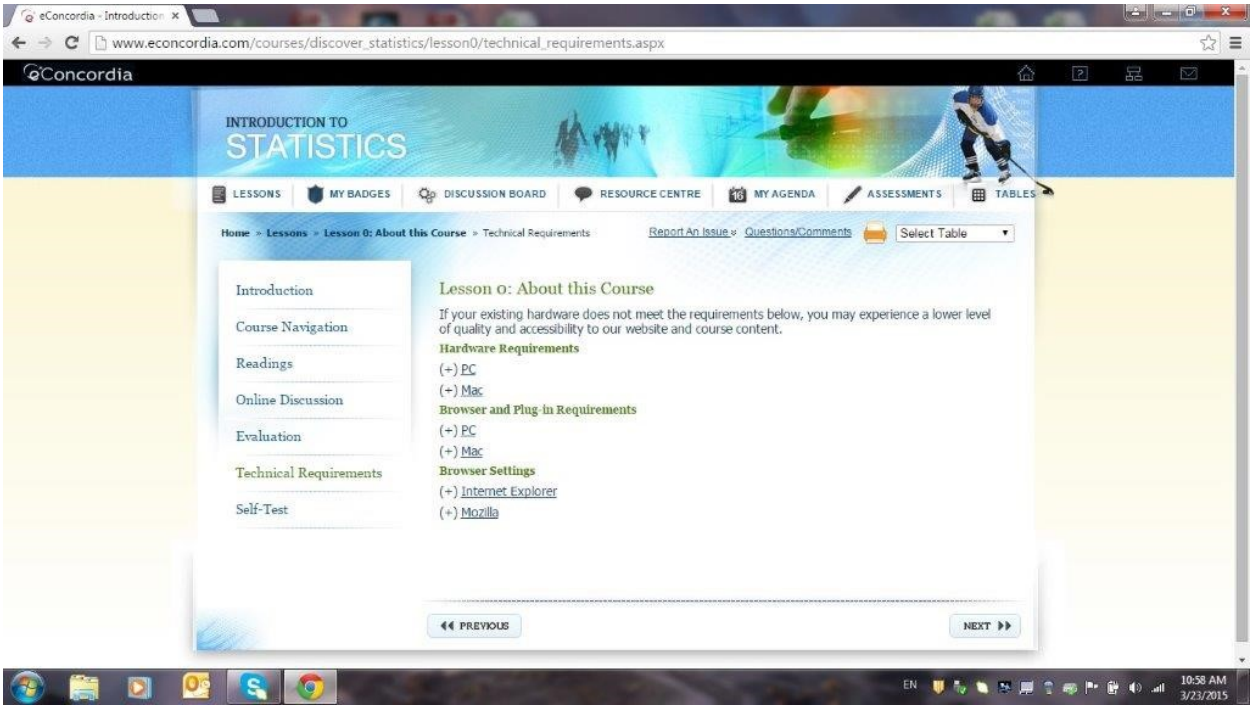

Image 6: Lesson 0 – Self-test

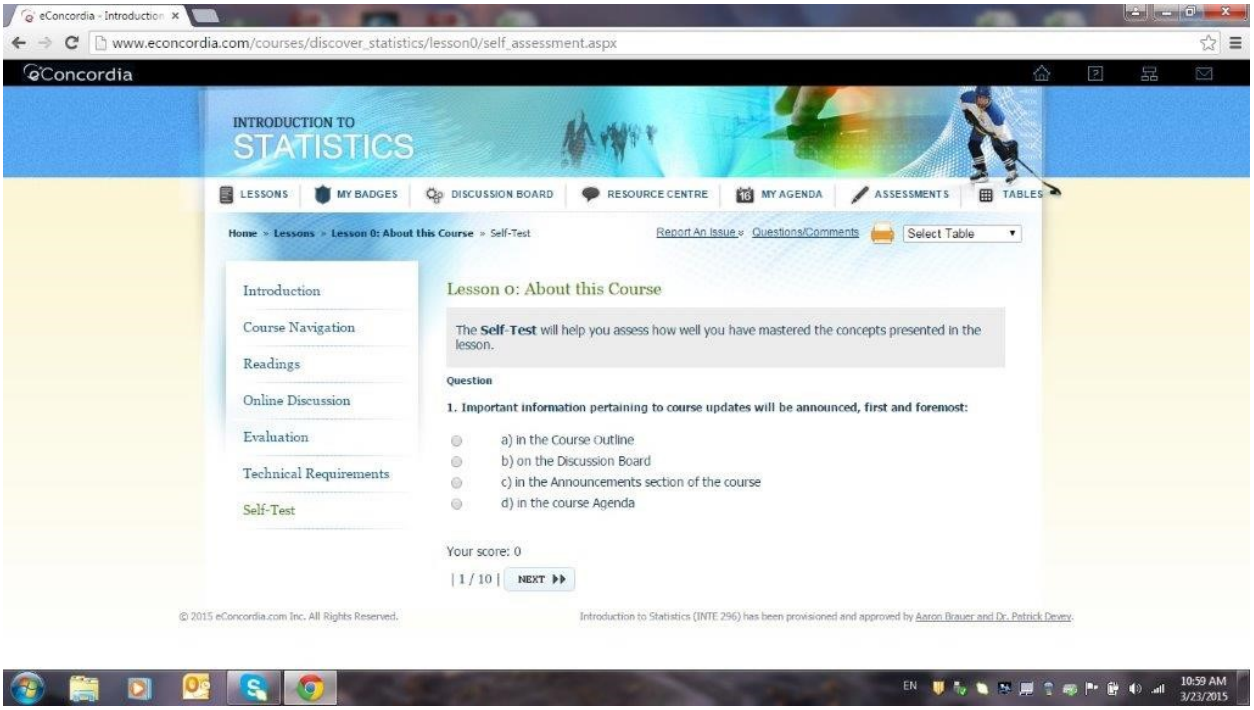

Image 7: Lesson 0 – Self-test correct answer

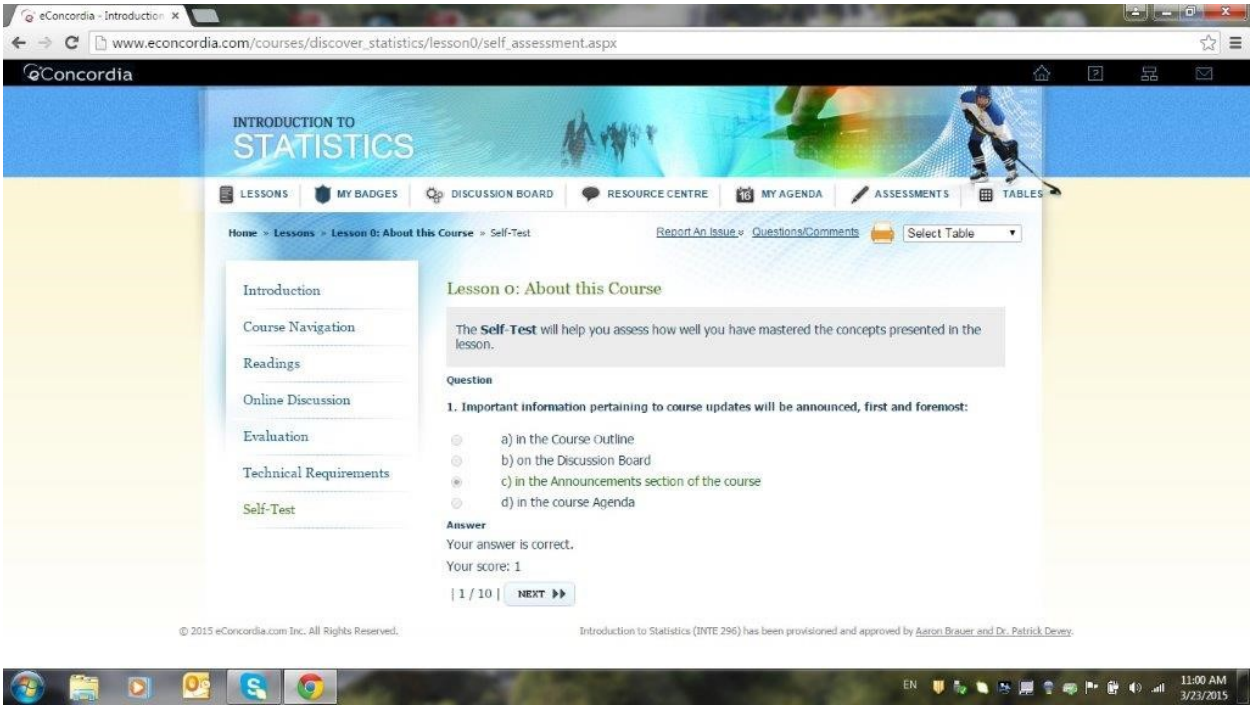

Image 8: Lesson 0 – Self-test incorrect answer

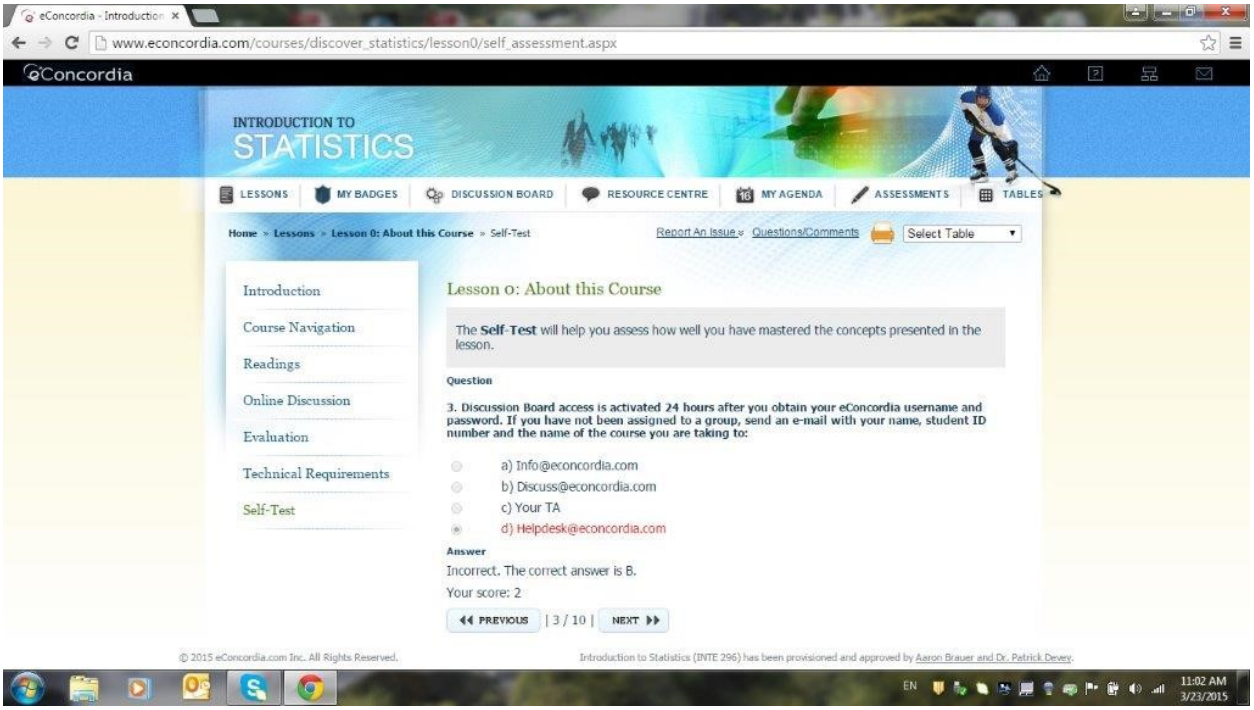

Image 9: Lesson 1 – Study notes

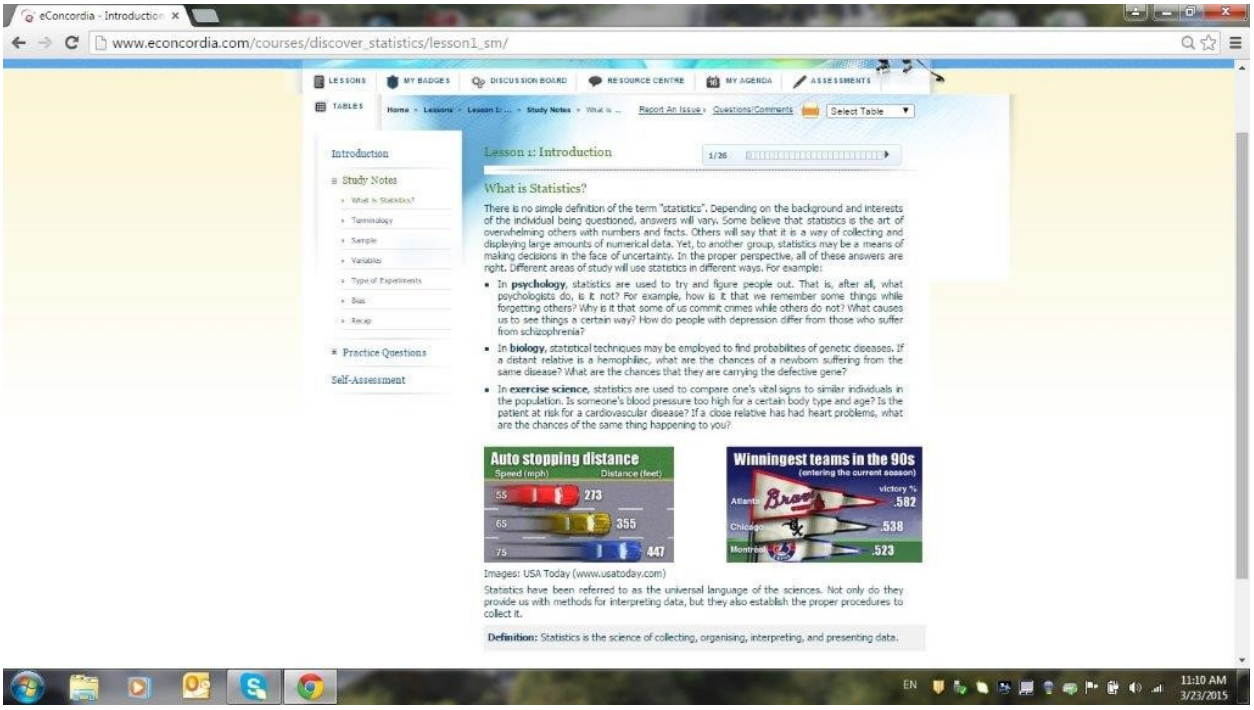

Image 10: Lesson 1 – Built-in exercise

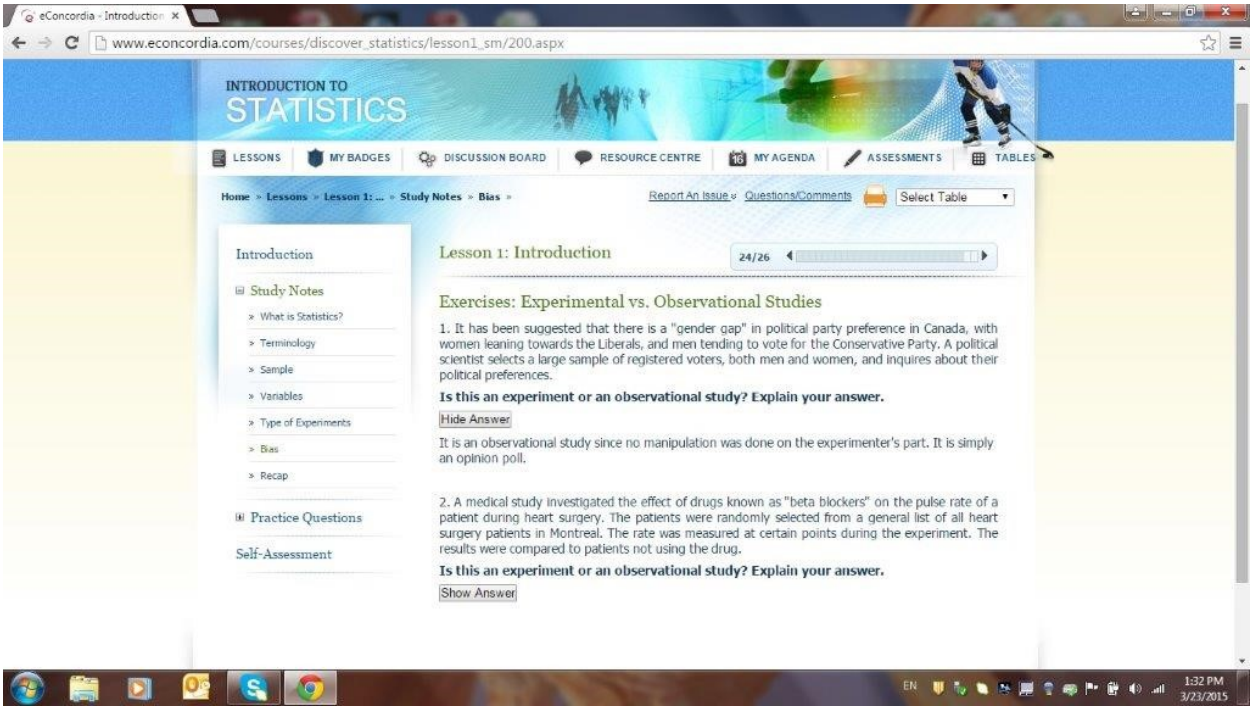

Image 11: Lesson 1 – Practice question

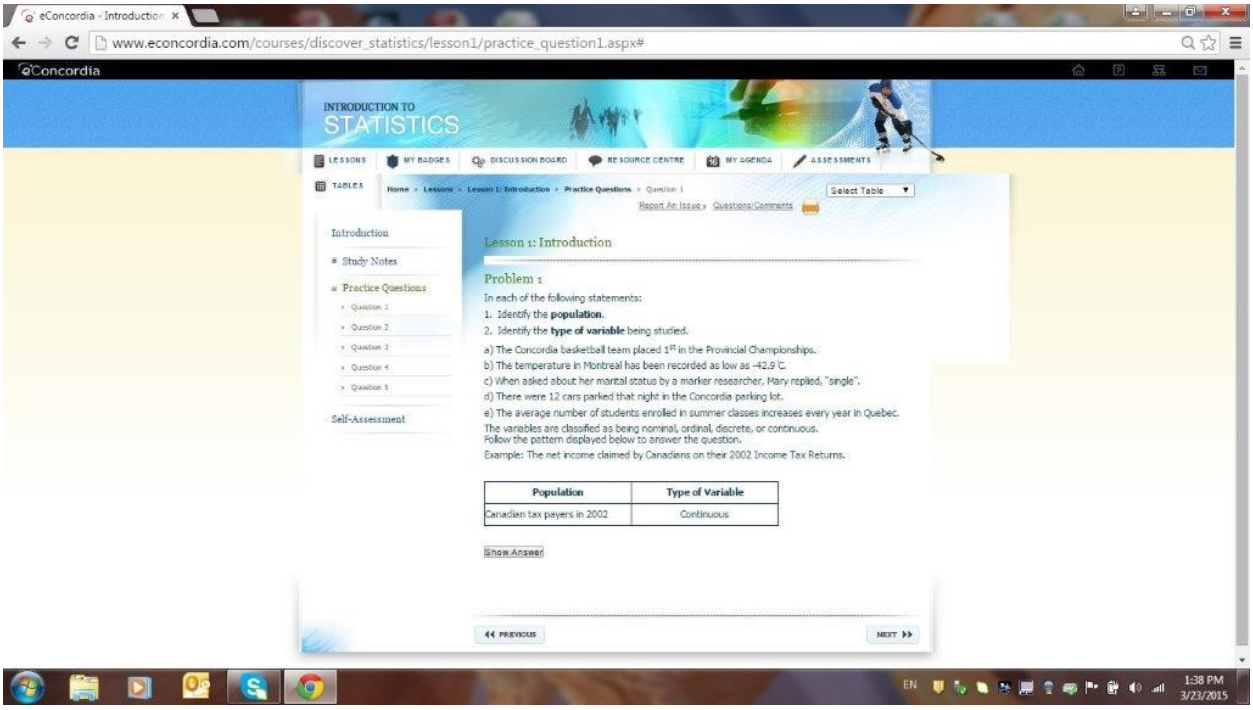

Image 12: Play the game! – Tutorial

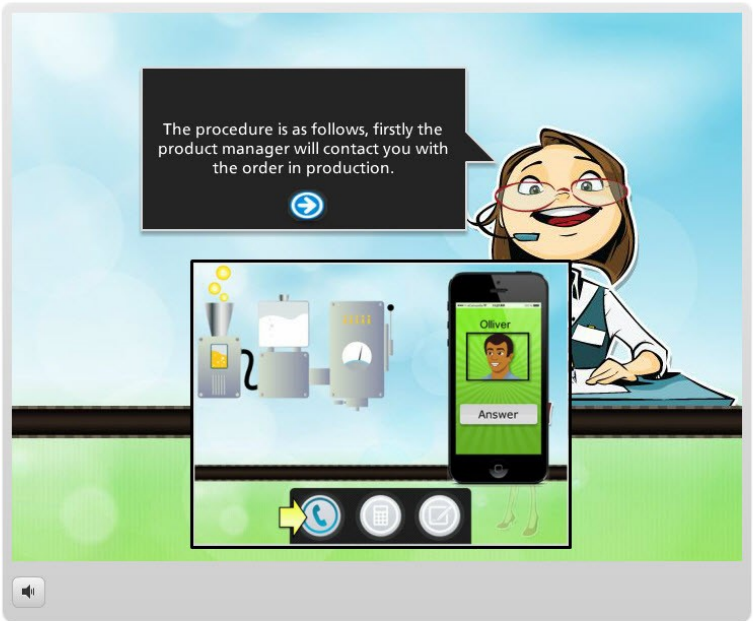

Image 13: Play the game! – Action

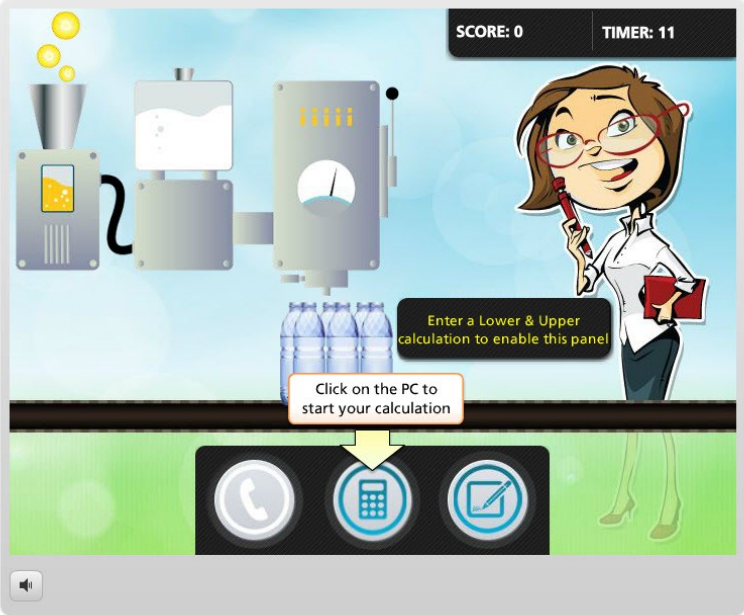

Image 14: My badges – Points and badges description

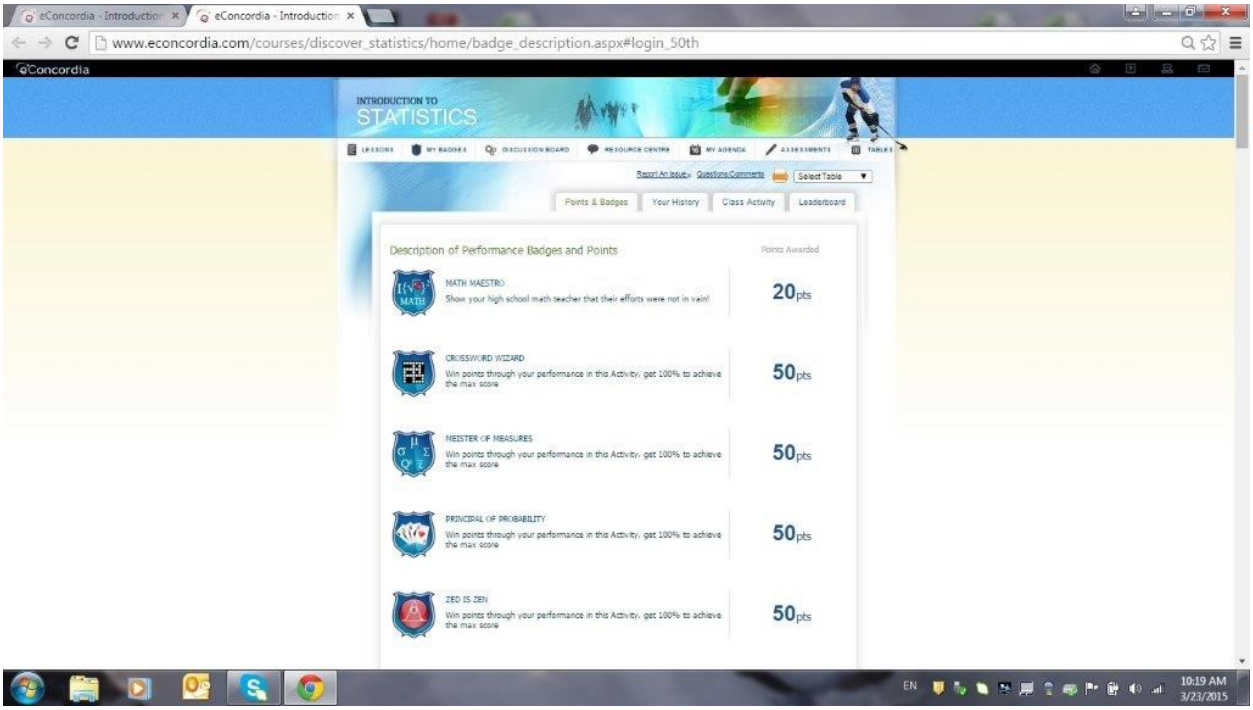

Image 15: My badges – Your history

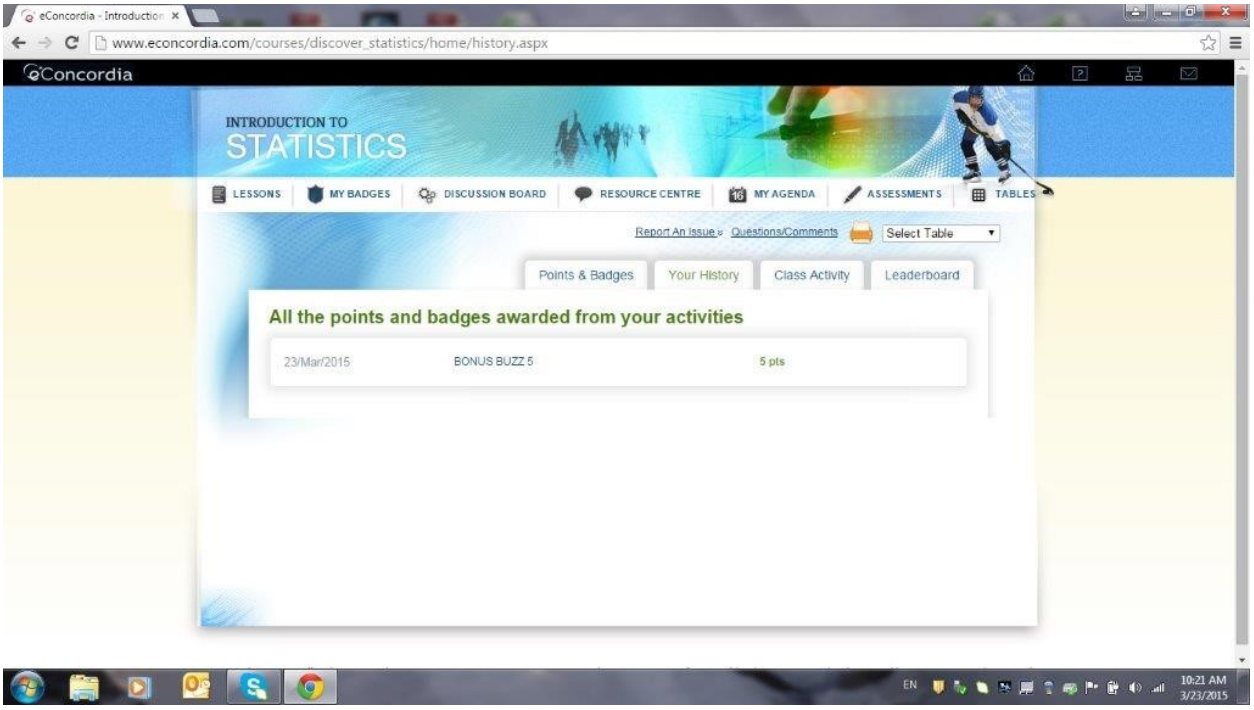

Image 16: My badges – Class activity

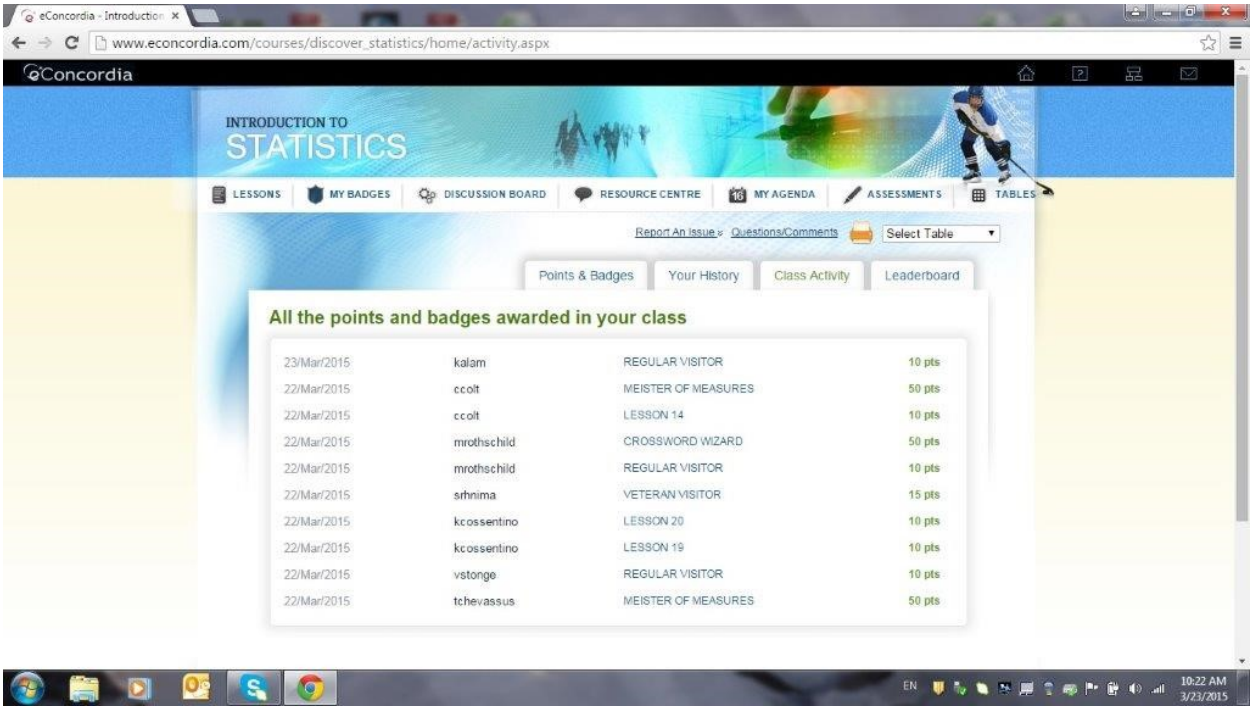

Image 17: My badges – Leaderboard

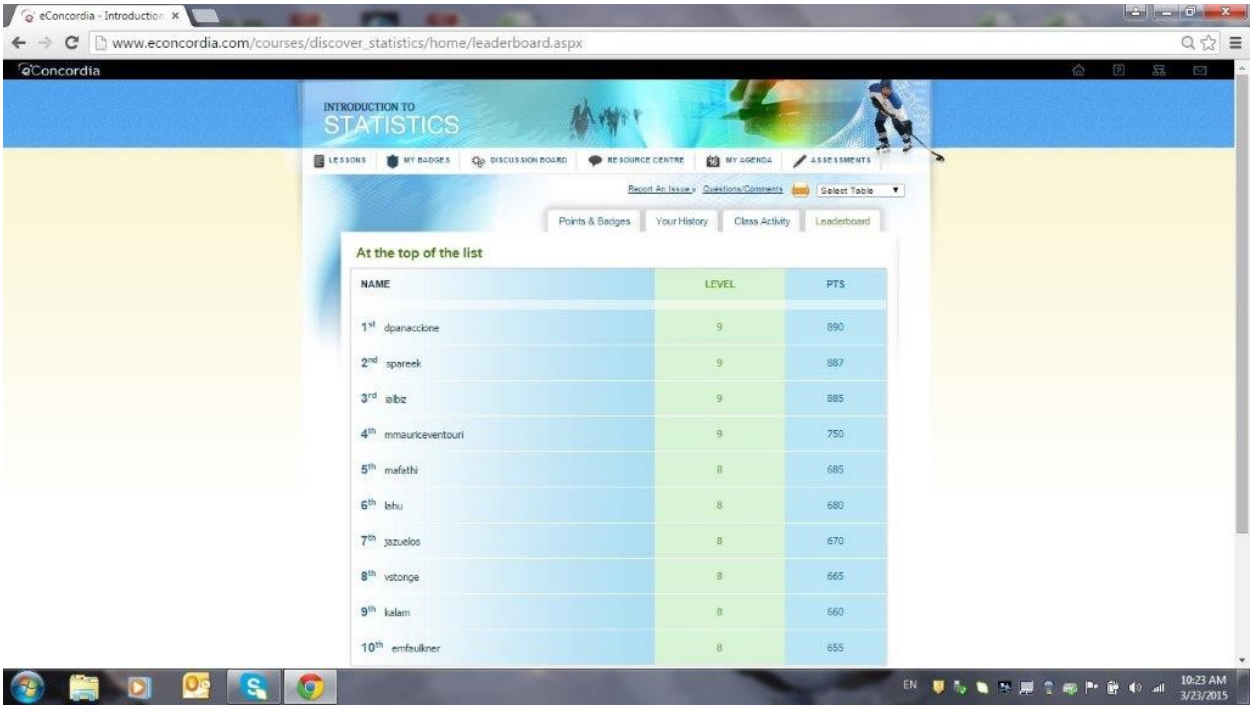

Image 18: Assignments – Sample exams

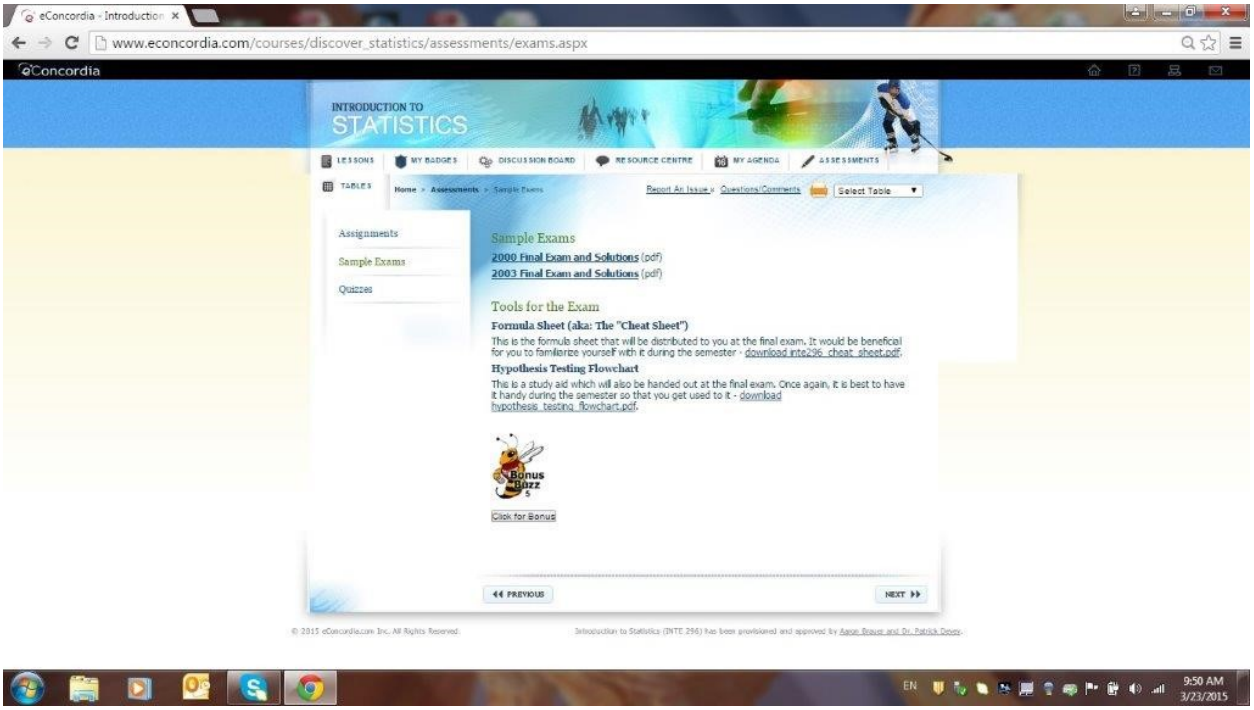

Image 19: Assignments – Quizzes