

Evaluating Interactive Television Courses: An Identification of Factors Associated with Student Satisfaction

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Abstract

This paper evaluates Interactive Television (ITV) Engineering courses, Statics and Dynamics, from the perspective of host-site students. The study took place at the University of Kentucky during the Spring 2004 semester utilizing survey methods to identify factors that are influential in determining students' satisfaction with a particular course. Although the literature is divided between host-site and remote-site students' satisfaction, this research focuses purely on the host-site perspective. Given the study's focus on host-site students, as well as undergraduate engineers, it is relevant to the growing literature on distance education. Results suggest that ITV course satisfaction depends largely on the nature of the course and course content, the instructor, accessibility of information, and technical equipment consistency.

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The University of Kentucky (UK) and Western Kentucky University (WKU) have combined faculty and resources to offer joint undergraduate degrees in Mechanical Engineering and Civil Engineering. Several courses are taught each semester, whereby UK serves as the host-site and WKU receives the course in an Interactive Television (ITV) format from the UK. This study originated out of an effort to gain insight into the joint program's students' perceptions of the ITV courses. Since the joint-degree programs are in the beginning stages and both institutions are progressing along the learning curve, there is an effort to continually look for ways to examine and improve the program. The first Accreditation Board for Engineering and Technology (ABET) visit was conducted in November, 2004, during the semester immediately following the semester for which the data for this study was collected and analyzed. The results presented will support an ongoing evaluation effort to gauge students' satisfaction with regards to the joint program, its faculty, its courses, and its means of instruction.

Because of the "newness" of this program and the political aspects of the interconnections between the two universities, the evaluation is being conducted as a field study only at the sending site, UK. Although the long-term goal is to better understand the perceptions of students at both the sending and receiving sites, this study focuses only on the sending-site students. This research also presents a solid methodological approach for evaluating student satisfaction in ITV courses. In recent years, many articles have been published that criticize the manner in which distance education research is conducted. Phipps and Merisotis (1999) claim the weaknesses involved in distance education research typically pertain to lack of experimental designs, including randomization and treatment groups, and lack of statistical sophistication. Although the authors agree these elements would make any research more methodologically sound, it is impossible to include all these elements in studies of this nature. Clark (2000) argues distance education studies should not make comparisons against other means of distance education. Instead, future research should make comparisons within the same form of distance education. To address concerns regarding experimental designs, it is impossible to have a true experimental design in a study of this nature because students volunteer to enroll in these

courses. Because of this, the true experimental element cannot exist. Although this study utilizes primarily descriptive statistics, it is believed better research will result from studies that involve better measurement techniques rather than sophisticated statistical methods. A more thorough analysis of instruments and measurement techniques will provide more precise and greater insight in studies pertaining to students' satisfaction with various forms of distance education. Again, although many articles stress poor methodologies, we believe the methods of this study are appropriate for evaluating students' satisfaction with ITV courses. This study should serve as a foundation for future studies of its nature.

Background

Although the literature is sparse, some authors recognize the importance of measuring student satisfaction with ITV instruction. Zarghami and Hausafus (2002) believe “the assessment of student satisfaction with ITV has been overlooked mostly due to the general conclusion that students were uniformly satisfied with distance education (296)”. It is easy to understand why many would make this assumption, as institutions with such programs feverishly market the advantages of ITV and distance education. Cited advantages, including convenience of location, time, travel, expenses and opportunity for capturing lectures on tape for future reference, frequently contribute to many forgetting about the potential woes of dealing with technological equipment (cameras, microphones, televisions and monitors, etc.) necessary to conduct ITV courses. Also frequently overlooked is the upgrading of skills and the maintenance of the comfort level of ITV instructors, many of whom have limited experience with distance-based instruction.

Wheeler and Batchelder (1996) and Grove (2001) believe it is the remote-site students that often receive the most benefits of ITV because host-site students must contend with all the equipment that would not normally be necessary to conduct class. Other researchers have found satisfaction to be based largely on factors such as student personality traits and learning styles (Bower, et al., 2001). Sorensen (1996) and Anderson et al (2002) found that remote-site students are generally less satisfied than host-site students. Clow (1999) also found that remote-site students are less satisfied despite their critical acclaim for ITV. He believes remote-site students are more likely to make positive statements about ITV so the distance program will continue in the future.

Zarghami and Hausafus (2002); Haga and Heitkamp (2000); and Navarro and Shomaker (1999) found the opposite to be true. That is, students at the host-site are generally more satisfied. Lyons, MacBrayne and Johnson (1994) found student satisfaction increases when students become more comfortable with ITV and have taken ITV courses in the past. Because the literature is so limited and its results are inconclusive, the goal of this research is to better understand the host-site students' satisfaction with ITV. Ultimately, the research will be conducted in phases, beginning with the study at the receiving site (where access to subjects is not limited), moving on to an examination of the remote-site, and then finally, viewing both sites collectively. This will result in a full picture, leading to conclusive findings and allowing for a triangulation of results along the way.

Methods

Population and Sampling

Each semester UK offers four to six ITV courses to WKU students¹ enrolled in the new joint-degree baccalaureate program. Courses in Statics and Dynamics are foundational courses in both Mechanical Engineering and Civil Engineering curricula, and, by prior mutual agreement between the institutions, are offered by UK-appointed faculty. Although these courses vary in enrollment by institution, the student population is large enough to produce statistically stable results.

In this study, every student at the host-site enrolled in either Statics or Dynamics was given a

self-administered survey and asked to voluntarily complete it. There was no penalty for not participating and students were informed that data would be aggregated, thus alleviating concern they would be identified. There were a total of 19 students in Statics and 31 in Dynamics. The survey was administered at the end of class on the final day of regular course instruction during the Spring 2004 term. The surveys yielded 15 responses from the Statics course and 27 responses from the Dynamics course.

The data collection process began with providing the surveys to the faculty teaching the courses. Each faculty was supplied with instructions to administer the surveys as they would a typical student course evaluation. The instructors distributed the surveys at the end of class and then vacated the room while the students completed the survey. A student collected the surveys and placed them in a sealed envelope. The surveys were then returned to the researcher via campus mail.

Instrumentation

For this study, a self-administered pencil-and-paper survey was used to collect the data. The instrument was adopted from a previous study administered to graduate students from various majors. Zarghami and Hausafus (2002) found six constructs to measure student satisfaction. With minor modifications and the addition of demographic questions, the survey was administered in two engineering courses: Statics and Dynamics. These courses are representative for this field study since they are fundamental, required courses of the majority of engineering majors. At UK, varying by engineering major, approximately 70% of all students are required to take Statics and approximately 45% are required to take Dynamics. Students were asked to provide their level of agreement with 40 items utilizing a five point Likert-type scale as follows: Strongly Agree = 5, Agree = 4, Neither Agree nor Disagree = 3, Disagree = 2 and Strongly Disagree = 1. The 40 items were divided among six constructs: (1) Instructor's communication skills, (2) Instructor's teaching skills, (3) Accessibility of instructor out of the classroom, (4) Course management, (5) Course content and (6) Quality of technology. Additionally, 15 relevant demographic questions were asked to gain a better understanding of the composition of the students in the classes. Finally, four open-ended response questions were included, allowing students to expand on previous answers and to offer information that was otherwise unsolicited. The survey was designed to gain knowledge of student satisfaction related to the six constructs, and to detect probable relationships among the demographic variables via a correlation analysis.

Data Analysis

Data were initially entered into an Excel spreadsheet, both by course and overall data. The data were then uploaded into Minitab14 for data analysis. Data analysis included calculating descriptive statistics, specifically means and standard deviations, along with counts and percents; correlation estimates; and t-tests. Reliability estimates were produced via an SPSS 12.0 analysis. All missing data were treated as missing.

Results and Conclusions

Response Rates and Reliability

The survey response rates were relatively high. The Statics professor requested 20 questionnaires, and the Dynamics professor requested 40. However, 19 and 31 were distributed, respectively. Of those, 15 completed or partially completed surveys were returned from the Statics class and 27 from the Dynamics class. Thus, calculating response rate as the number of returned surveys divided by the number of surveys distributed would result in a response rate of 79% for Statics and 87% for Dynamics, argued by most to be representative. Still, to ensure quality of response, a check of reliability was conducted by producing Cronbach's alpha estimates on the constructs. Analyses produced estimates in the range from 0.75 to 0.91, moderate to high.

The construct with the lowest reliability was the “Instructor's communication skills,” which was discovered to include a question that did not fare well with students responding to the survey. If removed, this might substantially increase the reliability of this construct. Still, since there is no theoretical grounding for removing the item, the construct remains intact. “Course content” was found to have the highest reliability. The Cronbach's alpha coefficient for overall reliability was 0.93 for this study, providing confidence the statistical results produced are coming from a stable measurement source.

Student Composition and Characteristics

The student composition for this study consisted of 42 students at the sending-site (UK). The mean age for students was 22, ranging from 19 to 32 years old. The survey sample was 93% male. Often, this lack of female subjects would be of concern due to the lack of diversity, however here it is representative of a typical engineering program (American Society for Engineering Education, 1994, as referenced in Sasser, Lineberry, and Scheff, 2004). In terms of class rank, 41% of the sample classified themselves as seniors, 41% juniors, and 18% sophomores. All subjects were classified as legal residents of Kentucky . This is important to note because international students typically comprise a substantial number of those admitted to engineering programs. It is also somewhat surprising that every student is a Kentucky resident considering UK is a large, land-grant state university. Reasons for this might include most out-of-state and international students enroll in the graduate programs instead of undergraduate programs, and the state of Kentucky itself is a relatively homogenous state in terms of ethnic and racial diversity. According to “ UK at a Glance: Fact Booklet 2003-2004,” approximately 89% of the undergraduates enrolled at UK are classified as White. Also, approximately 80% of the entire university is comprised of resident students (2003). UK College of Engineering data for 2003 reveal 89% of the undergraduate students are classified as White (Headcount Enrollment by College, Level and Ethnicity, 2003). Thus, this suggests the respondents for this survey could be homogenous in terms of demographics, socioeconomic status, and other related measures.

In terms of employment, 65% of the respondents reported working part time, 8% full-time, and 27% reported to be without current employment. This includes all forms of employment, including student work-study. About half the respondents majored in Mechanical Engineering, one-third in Civil Engineering and the remaining students majored in Electrical Engineering and other majors. The mean GPA for the 42 students was 3.21. The majority of students, 82%, reported taking the course to fulfill a requirement. About 15% claimed to take the course because they had an interest in the subject matter. For most students, 64%, this was their first experience with ITV.

Analysis of Student Satisfaction Mean Scores

Prior to analyses, four questions were selected based on their fundamental link to student satisfaction to determine if responses were significantly different by class enrollment. In addition, classes were compared on the overall constructs. The majority of constructs, along with two of the four t-tests are significant at the $\alpha = .05$ level. A 2-sample t-test revealed there was indeed a significant difference in variance between the two engineering courses in the items “Presentation aids helped me to understand the content” and “The content of the course promises to be useful for me in the future”. P-values for each question were .008 and .009, respectively. Given the importance of these variables, the data were kept disaggregated and analyzed by class. The discussion will focus at this level, as it appears to be most meaningful.

When examining individual constructs, the mean scores indicate students are relatively satisfied with the six constructs studied in this research. (See Table 1 in the Appendix for Table of Means and Standard Deviations). The lowest overall mean score ($M = 3.72$, $SD = 0.91$) fell in the “Accessibility of instructor” construct. This construct primarily sought to explain how accessible the instructor was outside of class. Although students claim the instructor is generally accessible

outside of class via phone, email, fax, etc., the lower scores resulted from questions regarding the instructor's returning a phone call or email in a timely manner. These data suggest the instructors are approachable, offer sufficient office hours and opportunities to interact individually, but are not as quick as some students might like in terms of responding to an email or returning a phone call. These data could also suggest most students did not attempt to contact the instructors; therefore, students neither agree nor disagree with the survey items. Considering the survey was not designed with a "forced choice" scale, one can only speculate as to whether or not students actually had an opinion, or if some questions did not apply to them. However, the best evidence that the students indeed had opinions and expressed them in the survey is revealed when we examine the standard deviations for the Statics course. The variation in responses is considerably greater than the standard deviations found in the Dynamics course. Conversely, however, this does not prove the students in the Dynamics course were very opinionated, as a majority of students choosing the "neutral" category could account for these data. Furthermore, these data also affect the overall scales. This result could be potentially alarming considering students at the sending-site feel so negatively about this construct. Most will agree ITV is generally more difficult for students at the receiving-site because the means of access are more limited than those of students located in the same physical location as the instructor. Perceptions from the students at the receiving site will need to be collected to determine if a unique phenomenon is occurring or if these data are somewhat misleading on the surface.

The construct with the highest overall mean ($M = 4.23$, $SD = 0.60$) was "Course management." Zargami and Hausafus defined this construct as "registration, course materials delivery, site support, and student access to resources" (297). This suggests that students are generally pleased with the administrative processes, library access (physical and/or electronic), course syllabus, and other factors that aid in maintaining and directing an effective course. Regardless of site base, gaining access to materials such as inter-library loan and electronic reserves may apply to all students. Something that may not apply to all students, however, is the registration process. Students at UK enroll in ITV courses as they would a typical course. The process at WKU is slightly different than at UK, since students must specifically enroll in the joint program, which incurs an entirely different tuition and fee structure from the traditional UK and WKU programs. The comparison of the remote-site students to this sample will provide interesting insight into the enrollment process.

Overall, students expressed satisfaction with the statement "Instructor was enthusiastic in teaching this ITV course" ($M = 3.98$, $SD = 0.87$). Students in Dynamics were pleased with the instructor's enthusiasm ($M = 3.82$, $SD = 1.00$), and those in Statics even more so ($M = 4.27$, $SD = 0.88$). This is important because research suggests instructors often have a difficult time sustaining enthusiasm during ITV courses (Mayzer and Dejong, 2003). Willis (2002) says instructors are essentially limited in what they can do because of the technology. That is, television monitors and computer screens cannot give instructors the cues they would otherwise notice in a traditional classroom that are needed to keep students engaged. Furthermore, research also suggests that instructors tend to devote extra attention to students at the receiving site (Zhao, 2002). The fact that host-site students rate the instructors so highly in this research is commendable considering the circumstances. Zhao also found that although students are physically present in the same room as the instructor, the ITV experience is different than that of a traditional classroom. One should not compare an instructor's enthusiasm in a traditional course to that of an ITV course because there is a qualitative difference. One might argue students' perceptions and expectations may be somewhat different as well.

The items "The Assignments were effective in promoting learning" ($M = 4.29$, $SD = 0.60$) and "Presentation aids helped me to understand content" ($M = 4.13$, $SD = 0.51$) are crucial because they examine the instructor's teaching skills. The first question shows little difference in means between the two courses, ($M = 4.19$, $SD = 0.63$ compared to $M = 4.47$, $SD = 0.52$). The second question, however, shows a substantial difference between Dynamics ($M = 3.85$, $SD = 1.18$) and Statics ($M = 4.60$, $SD = 0.51$). When looking at other important items in the construct of

Instructor's teaching skills, Dynamics students are very satisfied with the instructor's knowledge of content. This suggests the students respect the instructor as an authority of the information, but find some faults with his conveying of the information. This might be explained by Quay and Quaglia's (2004) research where they found students generally look up to their instructors largely because instructors have so much influence and power over their students. Furthermore, satisfaction with a course can depend largely on how the instructor conducts his or her class. Offering practical assignments and effectively conveying the material with instructional aids are important keys in increasing students' contentment with their courses.

Students were asked if they believed the content of the course promises to be useful for them in the future. The students responded favorably overall ($M = 4.03$, $SD = 0.97$). This is an important question because it not only provides the students' perspectives on how the course fared in terms of content but also demonstrates its importance, practicality and usefulness in real life scenarios. Students in Statics ($M = 4.47$, $SD = 0.52$) generated significantly higher means for this question than students in Dynamics ($M = 3.77$, $SD = 0.75$), however². The high responses for this question might indicate most students do not regret enrolling in the course, and do not view it as a "waste of time". It could be implied students understand and appreciate the knowledge acquired in the respective course and that it has in some way contributed to personal growth, heightened confidence, increased knowledge, and maturity in one's chosen field of engineering study. One might argue students enrolled in Statics might feel stronger about this than students in Dynamics. Reasons for this might include the nature of the courses, the fact that Statics is a prerequisite for Dynamics, the workloads, and the instructors. Without more data, however, one can only speculate at this point.

Perhaps some of the most significant differences between the two courses were found in the students' perspectives on course difficulty, and their attitudes regarding taking and/or recommending another ITV course. Two-thirds of the students enrolled in Statics believed the course was about what they had expected in terms of difficulty. Two-thirds of the students enrolled in Dynamics believed the course was more difficult than they expected. About 93% of the students in Statics said they would take another ITV course; the same percentage said they would also recommend ITV courses to others. Only 56% of students in Dynamics said they would take another ITV course, and only 44% said they would recommend ITV courses to others. This suggests there may a correlation between the perceived difficulty of the ITV course and students' attitudes regarding enrolling in another course and recommending these courses to others.

Another significant finding pertains to Lyons, MacBrayne and Johnson's (1994) previous research. These authors found students generally become increasingly satisfied as they are taught more courses via ITV. In this research, this was the first ITV experience for students taking Statics. This was the second or third experience for 13 of the 27 students enrolled in Dynamics. This research reveals students with little or no ITV experience appear to be at least as satisfied as those students who have taken ITV courses before. Although these are merely surface data, this might suggest students do not necessarily increase satisfaction with ITV as they experience more courses.

Students in Statics reported higher means in five of the six constructs. The constructs with the greatest mean ranges between the two courses are "Accessibility of instructor out of classroom" and "Course content". Students in Dynamics reported greater access to the instructor; this was the only construct in which these students rated higher than Statics. Students in Statics, however, were more widely satisfied with course content than Dynamics students, a mean difference of 0.43. Also, from the 40 items in this survey, only 4 had overall means of 3.50 or below; Dynamics had 4 and Statics had 6, respectively. Students in Dynamics expressed high satisfaction with 16 of the 40 items; that is, a mean of 4.0 or higher. Statics students expressed high satisfaction in 27 of the 40 items.

Comment Analysis

Students were asked to complete four open-ended questions at the end of the survey. They were as follows:

- What in particular did you like most about this course?
- What in particular did you like least about this course?
- How can this ITV course be improved in the future?
- Any additional comments

Out of a total of 42 subjects, 29 provided either complete or partial comments. When asked what they liked most about the course, half of the students in Dynamics said “The instructor”. Remaining comments generally pertained to course material and how the instructor made notes available online. In Statics, only a couple of students specifically said “The instructor”. Most students referred to the material, ability to easily access course material and teaching style. About a fourth of the class liked the ITV concept. It is interesting students in Dynamics most often commented about liking the instructor, whereas the quantitative data indicate students were less satisfied with the instructor than students in the Statics course. This might suggest the students are indeed satisfied with the instructor, but it is the nature of the coursework and course content that make the course less favorable.

When asked what students liked least, 10 of 19 responses for Dynamics said ITV in some form. Remaining comments related to course difficulty, time commitment to homework and the working of homework problems. For Statics, only 3 of 10 comments involved ITV. The vast majority of comments pertained to the written assignment (i.e. graded assessments).

Students in Dynamics believe the course could be best improved by not offering it via ITV. Still, it appears ITV in itself is not necessarily the problem. Students want improvements in communication and technology because this could create less technical problems and delays, the source of many students' frustration. Three of the five students providing comments in Statics commented on technical problems and delays as well. It is interesting that students verbalize their dissatisfaction with the technical aspects of ITV since the quantitative data reveal students are relatively satisfied with the quality of the technology. This implies students are satisfied with the technology for the most part, but more reliable and less distracting equipment coupled with instructors well trained in teaching ITV courses could only improve matters. It was not feasible to independently determine the frequency of technical delays; however, recent experience at UK is that technical difficulties usually occur in the first two weeks of a semester, with fewer problems later in the term.

Overall, it appears host-site students have mixed feelings about ITV. As indicated above, this may vary from course to course depending on any number of factors. Some of the most significant, however, include course difficulty, quality of the course materials, course content, technical problems, and the instructor. It appears that students do not want to take an ITV course if they find the course to be more difficult than they would like. Although the content of courses cannot necessarily be changed, it is imperative instructors provide good, quality handout materials to students. Students are very pleased with instructors that make course materials available to them at their convenience. Technical problems that impede the “flow” of the course (e.g., late starts, interruptions in mid-course) can drastically affect students' views regarding ITV. Solid training and understanding of many of the psychological aspects of ITV might also benefit instructors in conveying information to two or more classrooms at once.

Limitations

One obvious limitation for this study was the relatively small sample size. Although most students in their respective courses completed the survey, a greater sample size might indicate

more precise and meaningful results. Also, every respondent to this survey was a resident of Kentucky and a full-time student. Because of this lack of diversity in student demographics, a more diverse population might yield considerably different results. Part-time students might also voice very different concerns and yield different results as well. Furthermore, the students surveyed in this study were 93% male. Although this is fairly common for majors in certain fields within engineering, it is not typical in most other undergraduate programs. Finally, the study, as designed, did not investigate the potential sources for students' selection of ITV courses over traditional sections of the same course. An interesting corollary study would be to compare student demographics across multiple sections of the same course, ITV vs. traditional delivery modes.

Implications for Program

This study is important for several reasons. First, the results of the data will provide meaningful information that administrators and faculty alike can use to target potential problem areas for continuous quality improvement of the current joint-degree program. It will also provide a template for evaluation for similar programs to follow in the future, as UK also offers full undergraduate programs at the Paducah campus, in cooperation with West Kentucky Community and Technical College and Murray State University . Furthermore, there is the potential for more multi-institutional arrangements with and among other State educational partners in the future. Finally, it will serve as an educationally sound evaluation measure for ABET accreditation, the chief and most respected accrediting agency for engineering programs.

Extensions to Similar Programs

This research should be valuable in other multi-institution programs and any program teaching ITV courses to undergraduates in Engineering ³ . Although the UK/WKU joint program is highly unique, as the authors are only aware of two other true joint programs in the nation ⁴ , it is expected more innovative endeavors will develop in the future at various colleges and universities throughout the world. Because ITV is a relatively new concept in terms of educational history, there is still a great deal to be learned. ITV use is valuable in off-cycle, modestly enrolled sections of required courses, for technical electives to be shared between and among campuses, and for courses that serve both a graduate and undergraduate function. A by-product of this course sharing is the faculty-to-faculty relationships that are promoted, leading to collaborative potential in other areas of faculty activity, including research and service.

In the joint-degree programs in which both WKU and UK award the degree, UK instruction is limited at present to ITV delivery for at least two reasons: (1) in accordance with the Framework of Agreement between the two universities, WKU is committed to a faculty staffing level that approaches adequacy of coverage of required baccalaureate content (a minimum of four full-time faculty in each joint-degree program) and (2) State funding to UK in support of the programs comprises less than 40% of the requested amount, requiring economies of course delivery to be sought, hence the combining of ITV with live, on-site instruction.

In the immediate future, and given the anticipated static level of State funding for higher education, the models above will remain intact. In the long term, more hybrid delivery modes are envisioned, but the UK College of Engineering preference for on-site presence of full-time teaching faculty (for baccalaureate degree programs, at least) will persist. Where appropriate, on-line, asynchronous instruction will no doubt become more heavily utilized, most likely not for entire courses, but rather for modules of courses that lend themselves to this mode of delivery or that serve the needs of practicing engineers for non-credit professional development. UK subscribes to the Blackboard Inc. online system to facilitate asynchronous learning and discussion resources. While some UK faculty are beginning to use features of this system, the predominate modes of distance-based delivery remains ITV, with occasional on-site visitation to remote-sites to ensure traditional student-faculty interaction.

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Footnotes

- 1 Most ITV courses originate from Lexington-based faculty; however, one or two courses per year originate from full-time special-title series faculty associated with UK 's extended-campus programs in Paducah , Kentucky , 400 km west of Lexington . (Murphy and Lineberry, 2003).
- 2 Statics is a key prerequisite for many upper-division courses in engineering, especially in those majors with highest UK engineering enrollments (e.g., Mechanical Engineering and Civil Engineering), and, while Dynamics is a prerequisite for some upper-division courses, it is much less critical to upper-division success.
- 3 In Kentucky, for example, the Council on Postsecondary Education has defined such arrangements as follows, in decreasing order of engagement: “joint,” “cooperative,” “collaborative,” and “other multi-institutional arrangements” (CPE, 2000).
- 4 University of California , Riverside and California State University , Fresno and University of North Carolina , Charlotte and Western Carolina University

	Overall		Dynamics		Statics	
	M	SD	M	SD	M	SD
	3.88	0.80	3.79	0.85	4.06	0.61

Instructor's communication skills:						
Instructor made me feel I was part of the class	4.07	0.84	3.89	0.89	4.40	0.63
In each session there was opportunity for me to ask questions	4.48	0.51	4.29	0.47	4.80	0.41
Instructor encouraged me to participate in class	4.07	0.88	3.85	0.97	4.47	0.52
I received feedback related to class assignments in a reasonable time	4.29	0.67	4.29	0.54	4.27	0.88
Instructor was supportive to my needs	3.91	0.85	3.86	0.99	4.00	0.54
Instructor was enthusiastic in teaching this ITV course	3.98	0.87	3.82	1.00	4.27	0.46
Instructor contacted me after I missed class	2.40	1.00	2.56	1.11	2.21	0.80
Instructor's teaching skills:	3.90	0.86	3.84	0.90	4.01	0.71
The assignments were effective in promoting learning	4.29	0.60	4.19	0.63	4.47	0.52
I had the opportunity to interact with other students	3.66	0.94	3.67	1.02	3.67	0.82
The instructor's teaching skills made me feel satisfied with the course	4.08	0.97	3.85	1.11	4.47	0.52
Instructor was well prepared in terms of content	4.53	0.51	4.46	0.51	4.60	0.51
Presentation aids helped me to understand content	4.13	1.04	3.85	1.18	4.60	0.51
Teamwork was encouraged when appropriate	3.40	0.87	3.54	0.82	3.20	0.94

Instructor used different methods to assess my progress	3.20	1.09	3.31	1.06	3.07	1.16
Accessibility of instructor out of classroom:	3.72	0.91	3.90	0.80	3.43	1.01
Instructor was accessible outside of class (via e-mail, phone, fax, etc.)	4.08	0.86	4.31	0.63	3.67	1.05
I am satisfied with the amount of individual contact I had	3.85	0.86	3.89	0.78	3.80	1.01
I was able to access the instructor during his/her office hours	3.75	1.06	3.96	0.94	3.40	1.18
Instructor returned my phone calls within a reasonable period of time	3.37	0.82	3.60	0.78	3.00	0.78
Instructor returned my e-mails within a reasonable period of time	3.56	0.94	3.76	0.85	3.27	1.03
Course management:	4.23	0.60	4.13	0.57	4.38	0.59
Textbooks for the ITV course were available	4.21	0.66	4.08	0.64	4.43	0.65
Distribution and collection of course documents were organized	4.21	0.70	4.00	0.74	4.50	0.52
Tests were administered adequately	4.41	0.50	4.35	0.48	4.57	0.51
Registration for the course was well organized	4.23	0.63	4.08	0.64	4.50	0.52
I had access to e-mail	4.31	0.52	4.27	0.46	4.36	0.63
Papers and tests were graded and returned by the instructor regularly	4.38	0.54	4.27	0.56	4.50	0.52

Syllabus and other course materials were accessible	4.41	0.50	4.35	0.49	4.50	0.52
Outside materials were accessible in the university's library	3.67	0.77	3.69	0.56	3.64	0.84
Course content:	3.95	0.93	3.79	0.82	4.22	0.79
Course content was meaningful	4.15	0.70	4.00	0.49	4.40	0.51
The content of the course promises to be useful for me in the future	4.03	0.97	3.77	0.75	4.47	0.52
The course handouts were useful	3.95	0.85	3.77	0.76	4.20	0.78
Course materials were effective for me in learning the content	4.03	0.92	3.85	1.09	4.33	0.82
Course content met my personal needs	3.95	0.85	3.96	0.87	4.00	1.00
Course content was lively and interesting	3.60	1.26	3.42	0.94	3.93	1.10
Quality of technology:	3.93	0.87	3.80	0.98	4.14	0.70
It was easy to see the TV monitor	4.15	0.80	4.08	0.76	4.27	0.80
It was easy to use the microphone	3.73	0.91	3.73	1.32	3.73	0.96
Photographs, diagrams, or charts were used appropriately	4.23	0.73	4.12	0.81	4.40	0.51
The use of interactive media was helpful to understand the content	3.60	1.24	3.31	1.38	4.07	0.80
Graphics or other visuals were easy to read	4.03	0.86	3.81	0.96	4.40	0.51

The amount of time graphics were left on the screen was sufficient	4.15	0.74	4.00	0.84	4.33	0.49
Videos were used appropriately	3.65	0.80	3.58	0.77	3.80	0.86
Grand Total:	3.94	0.83	3.88	0.82	4.04	0.73

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