# QUESTIONING FACULTY USE OF INFORMATION TECHNOLOGY BY CONTEXT OF NETS-T STANDARTS IN BOLOGNA PROCESS

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**ABSTRACT**
Using technology in and out of class has been becoming more and more important recently. University settings also become more dependent to technology. Bologna process requires university and faculty diffuse and disseminate information quickly. In this research it is aimed to examine faculty use of information technology in bologna process in the context of NETS-T standards. Results show that faculty are experienced computer and internet user and they can use information technology to foster their students learning experiences. And their use of technology is not differing by gender, age category, computer experience and internet experience.
**Keywords:** NETS-T, Information Technology, Faculty

## INTRODUCTION

By information society requirement and lifelong learning strategy, frame of university education re-defined (Bjekic, Krneta& Milosevic, 2010). Information society requires new abilities and new proficiencies. Information societies workforce should work in group and take job responsibility, and also requires computer, information, technology and digital literate person. Technology usage in educational settings help to improve students' and teachers' digital literacy level (Starcic, 2010).By improving students' digital literacy level students can study in a group by using information technology (IT) and teachers should support these processes.

Bologna process main goal is to set up a European Higher Education Area by harmonizing the higher education system of the 46 countries, and Turkey has been included in this process since 2001 (Sakarya&Kahraman, 2011). Bologna Process requires countries and universities establish educational and administer standards. To increase standards universities should document all processes and should inform all stakeholders about related processes. The bologna process has established Europe-wide higher education area to facilitate individual cross-borders mobility, coordinated national quality assurance, the transparency and recognition of duration and degrees of study courses (Powell, Bernhard & Graf, 2011). A university that would like to be a part of Bologna Process should define academic program competencies, course competencies, course and program outcome, student evaluation criteria, objectives, lesson plans and course documents.

Making standards and learning objectives explicit to the students is part of the effective technology implementation (Cradler, McNabb, Freeman & Burchett, 2002). By web sites established by university, faculty can declare all the requirement for their courses and students can examine each courses not only by course name and teacher name but also can examine by all requirements of course.

Our university unite some phases of Quality Management processes and Boogna Processes and established web sites to facilitate work done in both processes. With in the scope of quality improvements movement, it was aimed to provide instructors to conduct their educational, instructional and academic studies online (Elmas, 2012). To facilitate quality management and bologna process university set up four different information systems. These systems are;

- Sakarya University Academic Information System (SAÜ AkademikBilgiSistemi – SABİS) :

Via SABİS one can access to open course material, personal information services, student information services, personal web site management, course and exam programs etc.

- Educational Information System (EğitimÖğretimBilgiSistemi – EBS)

Via EBS instructors can edit and add academic program competencies and objectives, lesson plans, course outcomes, evaluation criteria, lecture notes and etc. student can see all these documents and can examine all courses university wide. And someone from outside of university can see all these documents.

- Strategic Management Information System (StratejikYönetimBilgiSistemi – SYBS)

Via SYBS, performance of units calculated in terms of strategies, objectives, sub-objectives, performance indicators and activity projects.

- SAU Campus Automation Web Information System (SAU CAWIS)

CAWIS has nine sub system and faculty, staff and students reach their personal information and their mailboxes.

To fulfill bologna processes and quality managements processes faculty and staff should use the systems which are defined above. In this research faculty use of information technology in terms of NETS-T standards was examined.

## RESEARCH PURPOSE

The purpose of this study is to examine faculty use of information technology in terms of NETS-T standards. After determining faculty use of information technology,

- Gender differences
- Age category differences
- Computer usage experience differences
- Internet usage experience differences were examined.

## DATA COLLECTION TOOL

To collect research data a survey was developed by researcher. Survey contains seven questions which examine demographic data of participants. And second section of the survey contains 37 questions which are specialized from ISTE NETS-T standards.

Research survey was distributed by hand and participants were given one week to complete the survey. Finally 91 survey was returned.

## FINDINGS

In this section findings revealed from the data will be summarized and interpreted. Summarized data were presented as tables and each table inferred regarding research context

**Table1Demographic Data of ResearchParticipants**

| | | Frequency | Percent |
|---|---|---|---|
| **Gender** | Male | 56 | 69.1 |
| | Female | 25 | 30.9 |
| **Did you get any computer training** | Yes | 53 | 65.4 |
| | No | 28 | 34.6 |
| **Title** | Prof.Dr. | 6 | 7.4 |
| | Assoc. Prof. Dr. | 11 | 13.6 |
| | Assist. Prof. Dr. | 34 | 42.0 |
| | Lecturer | 30 | 37.0 |
| **Faculty** | Faculty of Education | 6 | 7.4 |
| | Faculty Of Art And Sciene | 3 | 3.7 |
| | Faculty of Fine Arts | 9 | 11.1 |
| | Faculty of Technical Education | 4 | 4.9 |
| | Faculty of Engineering | 11 | 13.6 |
| | Faculty of Administrative Sciences | 17 | 21.0 |
| | Faculty of Technology | 8 | 9.9 |
| | Faculty of Business Administration | 22 | 27.2 |

As can be seen in Table 1, at the end of the survey administering process 81 survey were returned from the participants. And %69 of the research participants were male and %31 of the participants were female. Over the half of the participants, %65,4, got some courses or training programs regarding computer after graduation and during their teaching work.Research participants title can be seen in Table 1; %7,4 of participants are Prof.Dr. , %13,6 of the participants are Assoc. Prof.Dr., %42.0 of the participants are Assist. Prof.Dr. and %37.0 of the participants are Lecturer. Participants faculty is the last demographic data and %27.2 of the participants are work ate Faculty of Business Administration and %21.0of the participants work at Faculty of Administrative Sciences.

**Table2 Explorative data of somedemographic data**

| | Age | Computer Experience | Internet Experience |
|---|---|---|---|
| Mean | 35.84 | 14.87 | 11.76 |
| Median | 34.00 | 15.00 | 10.00 |
| Minimum | 23 | 2 | 2 |
| Maximum | 54 | 32 | 30 |
| Range | 31 | 30 | 28 |

Table 2 summarizes explorative data of three demographic data. To understand participants deeply Age, Computer Experience and Internet Experience were analyzed. Mean of participants age is 35.84 year and

youngest participant is 23 years old and oldest participants is 54 years old. Participants have average 14.87 year computer experience and the less experienced computer user have been used computer for two years and the most experienced computer user have been used computer for 32 years. Context of internet usage, participants have average 11.76 years interne usage experience.

**Table3Recodeddemographic data of participants**

| | | Frequency | Percent |
|---|---|---|---|
| **Age Category** | Younger | 44 | 54.3 |
| | Older | 33 | 40.7 |
| **Computer Experience Category** | Inexperienced | 31 | 38.3 |
| | Experienced | 47 | 58.0 |
| **Internet Experience Category** | Inexperienced | 38 | 46.9 |
| | Experienced | 40 | 49.4 |

Table 3 summarizes recoded data of participants demographic data. As can be seen in table 3 %40.7 of the participants older and %54,3 participants are younger. Based on computer experience, %38.3 of the participants are inexperienced computer user and %58 of the participants are experienced computer user. Context of internet usage, % 46,9 of the participants are inexperienced internet user and % 49.4 of the participants are experienced internet user. Since some of the participants did not indicate their age, computer experience or internet experience cumulative percentage is not equal to %100.

**Table4Responses of researchparticipantstosurveyquestions**

| | | Strongly Disaggree | Disagree | No Idea | Aggree | Strongly Aggree |
|---|---|---|---|---|---|---|
| I promote my students critical thinking abilities | Frequency | 3 | 7 | 8 | 43 | 20 |
| | Percent | 3.7 | 8.6 | 9.9 | 53.1 | 24.7 |
| I support my students critical thinking abilities | Frequency | 2 | 7 | 6 | 45 | 21 |
| | Percent | 2.5 | 8.6 | 7.4 | 55.6 | 25.9 |
| I engage my students to solve real world problem using digital tools | Frequency | 3 | 7 | 10 | 47 | 14 |
| | Percent | 3.7 | 8.6 | 12.3 | 58.0 | 17.3 |
| I promote my students reflection using collaborative tools to clarify students' conceptual understandings | Frequency | 4 | 5 | 11 | 46 | 15 |
| | Percent | 4.9 | 6.2 | 13.6 | 56.8 | 18.5 |
| I promote my students reflection using collaborative tools to clarify students' thinking | Frequency | 2 | 6 | 7 | 53 | 12 |
| | Percent | 2.5 | 7.4 | 8.6 | 65.4 | 14.8 |
| I promote my students reflection using collaborative tools to clarify students' planning | Frequency | 2 | 6 | 8 | 53 | 12 |
| | Percent | 2.5 | 7.4 | 9.9 | 65.4 | 14.8 |
| I try to be a model in collaborative knowledge construction | Frequency | 3 | 4 | 14 | 41 | 19 |
| | Percent | 3.7 | 4.9 | 17.3 | 50.6 | 23.5 |
| I design relevant learning experiences that incorporate digital tools to promote student learning | Frequency | 4 | 8 | 19 | 43 | 7 |
| | Percent | 4.9 | 9.9 | 23.5 | 53.1 | 8.6 |
| I develop technology-enriched learning environments that enable students to pursue their individual curiosities | Frequency | 3 | 8 | 23 | 42 | 5 |
| | Percent | 3.7 | 9.9 | 28.4 | 51.9 | 6.2 |
| I develop technology-enriched learning environments that enable students to become active participants | Frequency | 2 | 10 | 22 | 38 | 9 |
| | Percent | 2.5 | 12.3 | 27.2 | 46.9 | 11.1 |
| I customize learning activities to address students' diverse learning styles using digital tools | Frequency | 2 | 10 | 19 | 43 | 7 |
| | Percent | 2.5 | 12.3 | 23.5 | 53.1 | 8.6 |
| I customize learning activities to address students' diverse working strategies using digital tools | Frequency | 3 | 9 | 20 | 41 | 8 |
| | Percent | 3.7 | 11.1 | 24.7 | 50.6 | 9.9 |
| I customize learning activities to address students' diverse abilities using digital tools | Frequency | 3 | 7 | 19 | 46 | 6 |
| | Percent | 3.7 | 8.6 | 23.5 | 56.8 | 7.4 |
| I provide students with multiple assessments aligned with content standards | Frequency | 3 | 6 | 25 | 39 | 8 |
| | Percent | 3.7 | 7.4 | 30.9 | 48.1 | 9.9 |
| I provide students with multiple assessments aligned with technology standards | Frequency | 2 | 7 | 22 | 43 | 7 |
| | Percent | 2.5 | 8.6 | 27.2 | 53.1 | 8.6 |
| I use assessment results to inform my students regarding their learning | Frequency | 3 | 6 | 9 | 50 | 13 |
| | Percent | 3.7 | 7.4 | 11.1 | 61.7 | 16.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| I demonstrate fluency in technology system | Frequency | 6 | 6 | 11 | 43 | 15 |
| | Percent | 7.4 | 7.4 | 13.6 | 53.1 | 18.5 |
| I can transfer my current knowledge to new technologies | Frequency | 6 | 5 | 9 | 44 | 17 |
| | Percent | 7.4 | 6.2 | 11.1 | 54.3 | 21.0 |
| I can transfer my current knowledge to new situations | Frequency | 6 | 3 | 10 | 47 | 15 |
| | Percent | 7.4 | 3.7 | 12.3 | 58.0 | 18.5 |
| I can collaborate with students using digital tools to support students success | Frequency | 4 | 5 | 10 | 49 | 13 |
| | Percent | 4.9 | 6.2 | 12.3 | 60.5 | 16.0 |
| I can collaborate with peers using digital tools to support students success | Frequency | 4 | 6 | 15 | 44 | 12 |
| | Percent | 4.9 | 7.4 | 18.5 | 54.3 | 14.8 |
| I can collaborate with parents using digital tools to support students success | Frequency | 2 | 7 | 17 | 45 | 10 |
| | Percent | 2.5 | 8.6 | 21.0 | 55.6 | 12.3 |
| I can transfer relevant information effectively to students using a variety of digital age media | Frequency | 1 | 6 | 11 | 47 | 16 |
| | Percent | 1.2 | 7.4 | 13.6 | 58.0 | 19.8 |
| I can transfer relevant information effectively to parents using a variety of digital age media | Frequency | 3 | 4 | 20 | 42 | 12 |
| | Percent | 3.7 | 4.9 | 24.7 | 51.9 | 14.8 |
| I can transfer relevant information effectively to peers using a variety of digital age media | Frequency | 2 | 6 | 12 | 49 | 12 |
| | Percent | 2.5 | 7.4 | 14.8 | 60.5 | 14.8 |
| I can facilitate current digital tools to locate information resources | Frequency | 2 | 5 | 12 | 49 | 13 |
| | Percent | 2.5 | 6.2 | 14.8 | 60.5 | 16.0 |
| I can facilitate current digital tools to analyze information resources | Frequency | 1 | 7 | 10 | 50 | 13 |
| | Percent | 1.2 | 8.6 | 12.3 | 61.7 | 16.0 |
| I can facilitate current digital tools to evaluate information resources | Frequency | 2 | 6 | 12 | 47 | 14 |
| | Percent | 2.5 | 7.4 | 14.8 | 58.0 | 17.3 |
| I can facilitate current digital tools to use information resources | Frequency | 1 | 5 | 18 | 45 | 11 |
| | Percent | 1.2 | 6.2 | 22.2 | 55.6 | 13.6 |
| I can teach legal use of digital information and technology | Frequency | 3 | 8 | 19 | 45 | 6 |
| | Percent | 3.7 | 9.9 | 23.5 | 55.6 | 7.4 |
| I can teach ethical use of digital information and technology | Frequency | 3 | 5 | 25 | 39 | 9 |
| | Percent | 3.7 | 6.2 | 30.9 | 48.1 | 11.1 |
| I can address the diverse needs of all learners by using learner-centered strategies | Frequency | 6 | 4 | 17 | 43 | 9 |
| | Percent | 7.4 | 4.9 | 21.0 | 53.1 | 11.1 |
| I can promote responsible social interactions | Frequency | 4 | 6 | 16 | 46 | 9 |
| | Percent | 4.9 | 7.4 | 19.8 | 56.8 | 11.1 |
| I can participate global learning communities to explore newer applications of technology | Frequency | 3 | 7 | 23 | 38 | 9 |
| | Percent | 3.7 | 8.6 | 28.4 | 46.9 | 11.1 |
| I can exhibit leadership by demonstrating a vision of technology | Frequency | 2 | 11 | 28 | 34 | 6 |
| | Percent | 2.5 | 13.6 | 34.6 | 42.0 | 7.4 |
| I can evaluate current research on a regular basis to make effective use of existing digital tools | Frequency | 1 | 11 | 19 | 38 | 12 |
| | Percent | 1.2 | 13.6 | 23.5 | 46.9 | 14.8 |
| I can contribute to the effectiveness of teaching profession | Frequency | 3 | 5 | 13 | 43 | 17 |
| | Percent | 3.7 | 6.2 | 16.0 | 53.1 | 21.0 |

Responses to survey questions by research participants can be seen in Table 4. Over the %75 of the participants state that they can support their students critical thinking abilities, they promote their students reflection using collaborative tools and they can transfer information using various media, they can use digital tools to analyze information, they can transfer their knowledge to new technologies and faculty state they engage their students to solve real world problems. On the other hand %10 or less participant's state that they can facilitate digital tools to use information resources, they are a role model in collaborative knowledge construction,

Survey questions were analyzed by using t-test procedures to understand is there any differences by gender. Based on t test results there is no differences by gender for each survey questions. It can be said that gender is not the significant factor using information technology in and out of classroom settings and college professor can use information technology independently from gender.

**Table5 t-test results of surveyquestionsbyagecategory**

| | | N | Mean | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| I promote my students critical thinking abilities | Younger | 44 | 3.66 | -2.719 | 75 | .049 |
| | Older | 33 | 4.12 | | | |
| I support my students critical thinking abilities | Younger | 44 | 3.66 | -2.743 | 75 | .008 |
| | Older | 33 | 4.24 | | | |
| I promote my students reflection using collaborative tools to clarify students' conceptual understandings | Younger | 44 | 3.52 | -2.586 | 70.642 | .012 |
| | Older | 33 | 4.06 | | | |
| I promote my students reflection using collaborative tools to clarify students' planning | Younger | 44 | 3.64 | -2.119 | 73.466 | .038 |
| | Older | 33 | 4.03 | | | |
| I can teach legal use of digital information and technology | Younger | 44 | 3.75 | 2.184 | 75 | .032 |
| | Older | 33 | 3.30 | | | |

In table 5 t-test results of survey questions by gender are summarized and just statistically significant differences were reported. Based on results there is a significant difference between older and younger participants responses to "I promote my student critical thinking abilities" question ($t_{(75)}$=-2.719, p<.05).Older participants (M=4.12) state more positive responses than younger participants (M=3.66). There is a significant difference between older and younger participants responses to "I support my students critical thinking abilities" question ($t_{(75)}$=-2.743, p<.05). Older participants (M=4.24) state more positive responses than younger participants (M=3.66). There is a significant difference between older and younger participants responses to "I promote my students reflection using collaborative tools to clarify students' conceptual understandings" question ($t_{(70,642)}$=-2.586, p<.05). Older participants (M=4.06) state more positive responses than younger participants (M=3.53). There is a significant difference between older and younger participants responses to "I promote my students reflection using collaborative tools to clarify students' planning" question ($t_{(73,466)}$=-2.119, p<.05). Older participants (M=4.03) state more positive responses than younger participants (M=3.64). There is a significant difference between older and younger participants responses to "I can teach legal use of digital information and technology" question ($t_{(75)}$=2.184, p<.05). Younger participants (M=3.75) state more positive responses than older participants (M=3.30).

**Table6 t-test results of surveyquestionsbycomputertrainingstatue**

| | | N | Mean | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| I support my students critical thinking abilities | Yes | 53 | 3.74 | -2.734 | 79 | .008 |
| | No | 28 | 4.32 | | | |
| I can exhibit leadership by demonstrating a vision of technology | Yes | 53 | 3.53 | 2.037 | 79 | .045 |
| | No | 28 | 3.11 | | | |

In table 6 t-test results of survey questions by computer training statue are summarized and just statistically significant differences were reported. Based on results there is a significant difference between participants who got computer training and who did not, responses to "I support my students critical thinking abilities" question ($t_{(79)}$=-2.734, p<.05). Participants who did not get computer training (M=4.32) state more positive responses than participants who gotcomputer training (M=3.74).There is a significant difference between participants who got computer training and who did not, responses to "I can exhibit leadership by demonstrating a vision of technology" question ($t_{(79)}$=2.037, p<.05). Participants who got computer training (M=3.53) state more positive responses than participants who did not get computer training (M=3.11).

**Table7 t-test results of surveyquestionsbycomputerexperiencecategory**

| | | N | Mean | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| I can transfer relevant information effectively to students using a variety of digital age media | Inexperienced | 31 | 4.13 | 2.203 | 76 | .031 |
| | Experienced | 47 | 3.70 | | | |

In table 7 t-test results of survey questions by computer usage experience are summarized and just statistically significant differences were reported. Based on results there is a significant difference between experienced computer user and inexperienced computer user participants responses to "I can transfer relevant information effectively to students using a variety of digital age media" question ($t_{(76)}$=2.203, p<.05). Inexperienced

computer user participants (M=4.13) state more positive responses than experienced computer user participants (M=3.70).

**Table8 t-test results of surveyquestionsby internet experiencecategory**

| | | N | Mean | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| I can collaborate with parents using digital tools to support students success | Inexperienced | 38 | 3.89 | 2.219 | 76 | .029 |
| | Experienced | 40 | 3.45 | | | |

In table 8 t-test results of survey questions by internet usage experience are summarized and just statistically significant differences were reported. Based on results there is a significant difference between experienced internet user and inexperienced internet user participants responses to "I can collaborate with parents using digital tools to support students success" question ($t_{(76)}$=2.219, p<.05). Inexperienced internet user participants (M=3.89) state more positive responses than experienced internet user participants (M=3.45).

## RESULTS

In this research faculty use of information technology in bologna process is examined and participants are 35 years old averagely, and they have 15 years computer experience and 12 years internet usage experience. Participants are younger and experienced computer and internet user.

Based on survey question answers most of the faculty can support students critical thinking abilities, can promote students reflection skills, can use various media and can engage students to solve real world problems by using technology. And faculty state that they can be a role model to their studentsregarding technology usage. Finally faculty use of technology can differ significantly by age, computer experience and internet experience.

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