

Mathematics students – Online Learning Behaviour and Preferences

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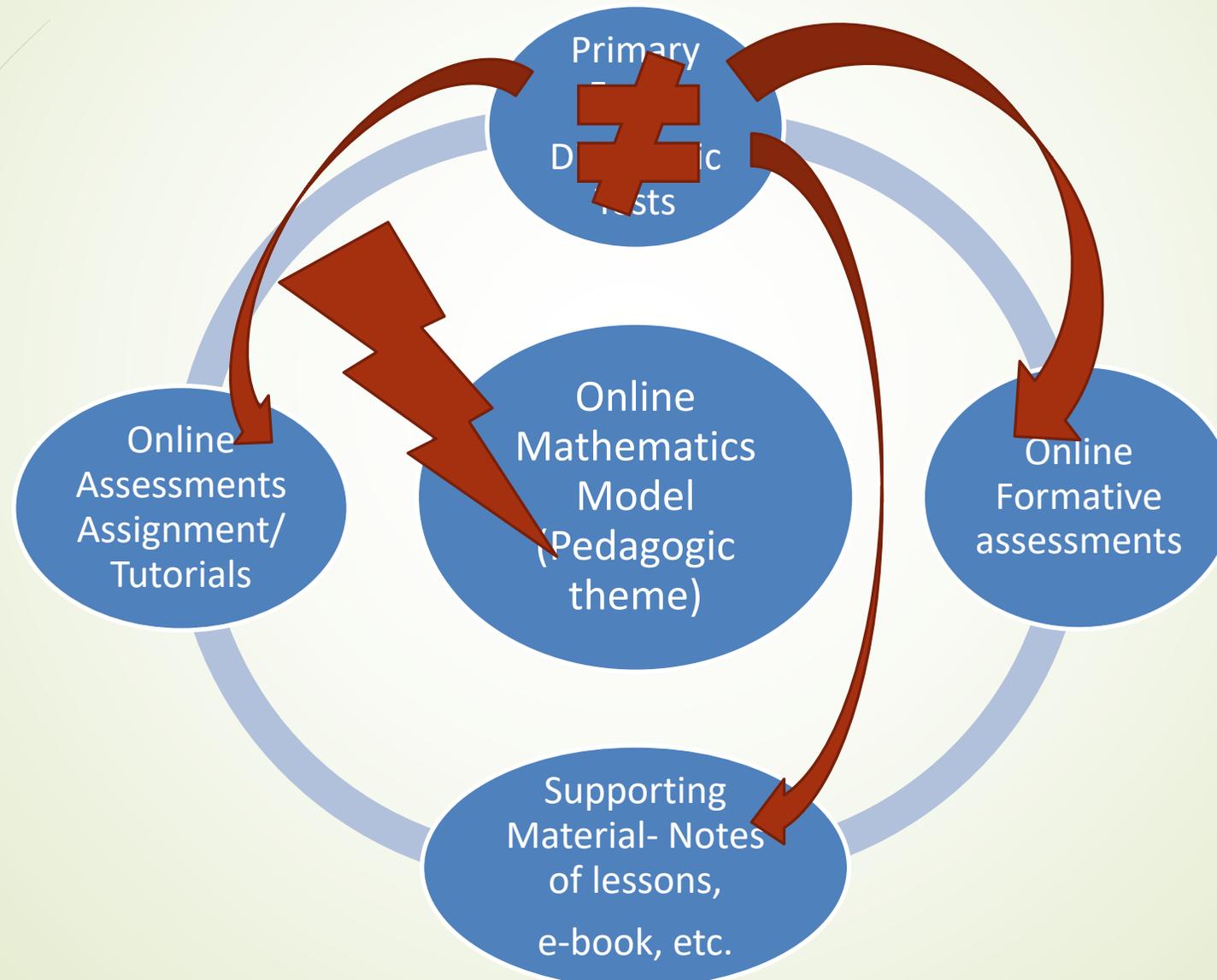
Department – Mathematics



INTRODUCTION

The internet and technological advances propel *educators* to continuously *seek ways to integrate developing instructional technology into coursework to facilitate active learning environments* and address the technology-driven learning preferences of the current generation of students. **‘the role of information and communication technologies to support learning and teaching is becoming the norm rather than the exception.** Many institutions have systems in place to ensure that a substantial portion of the academic programme is available online. **The manner in which academics utilize technologies to enhance learning is dependent on the academics’ desire to incorporate this technology in a meaningful way. Although pedagogy in ICT cannot be ignored, it may be limited in extent by the learner management system used’ (Ally 2017).**

Developing E-Learning Model





The general principles of effective pedagogy remain valid in the context of remote learning, but there are additional challenges facing the remote teacher. ***Ensuring equitable outcomes for disadvantaged students is more difficult for remote teachers and requires greater intentional effort.*** It is a false dichotomy to propose that undesirable ‘teacher-centred’ rote learning or desirable ‘student-directed’ enquiry constitute the two main forms of remote pedagogy. For them, the effective remote teacher is a subject matter expert skilled in different aspects of ‘direct instruction’.

Creating entirely new learning resources can take up a disproportionate amount of a remote teacher’s time, thereby reducing available time for interaction with students. (McAleavy, T; Gorgen, K. 2020)

LITERATURE REVIEW

1. Estacio, R.R. and Raga Jr, R.C. (2017) analyzed students online learning behavior in blended courses using Moodle“. Hundreds of activity logs for each student were collected, filtered and analyzed using a machine learning technique known as vector space model (VSM). The paper also describes some prototypical coding trajectories generated using these logs, look on probable relationship to student’s overall course performance and finally on effects teaching and learning in blended environments.



2. Liang-YiLi^aChin-ChungTsai 2017, Accessing learning materials, that is, lecture slides, video lectures, shared assignments, and forum messages, is the most frequently performed online learning activity. However,. This study analyzed system logs recorded by a Learning Management System in which 59 computer science students participated in a blended learning course to learn mobile phone programming. The results revealed several significant findings. First, the students viewed the learning materials related to their classroom lectures (i.e., lecture slides and video lectures) for longer and more often than other learning materials (i.e., shared assignments and posted messages). Second, although the students spent a great deal of time viewing the online learning materials, most did not use annotation tools. Third, students' viewing behaviors showed great variety and were clustered into three behavior patterns: "consistent use students" who intensively used all of the learning materials, "slide intensive use students" who intensively used the lecture slides, and "less use students" who infrequently used any learning material.

3. Perceived behavioral control refers to the individual's capability and effort and facilitating conditions that affect the ability to use educational technologies. It includes ease of use, self-efficacy, and accessibility to technology. Ease of use refers to the degree to which a user expects the target system to be free of effort. It implies prior experience and knowledge about educational technology (Kemp et al., 2019)



PRELIMINARY INVESTIGATION

Survey results

First year Engineering of Technology - Mathematics students

Total of 786 registered students

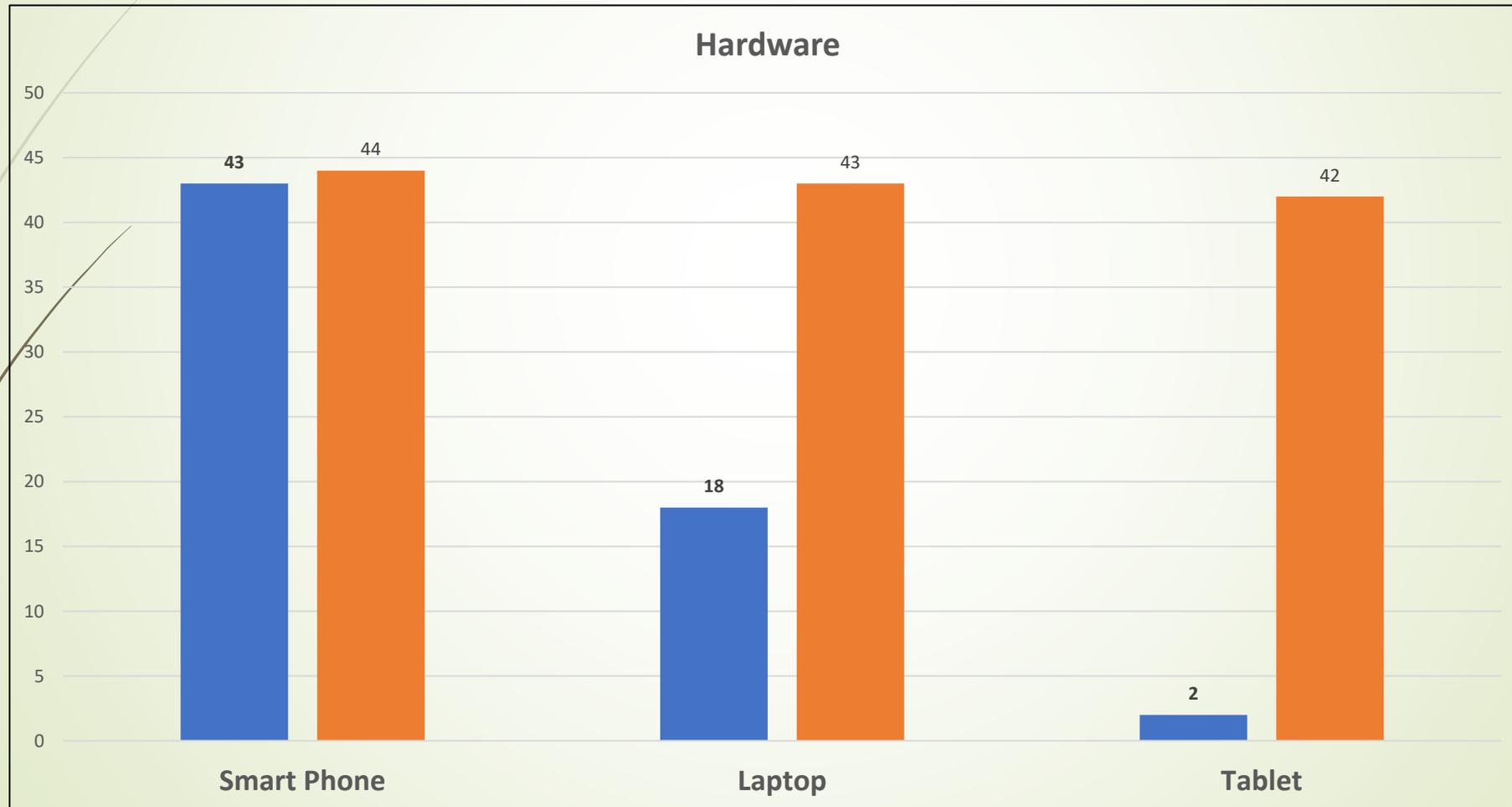
THREE of SEVEN programme departments participated

Total number of students: 248

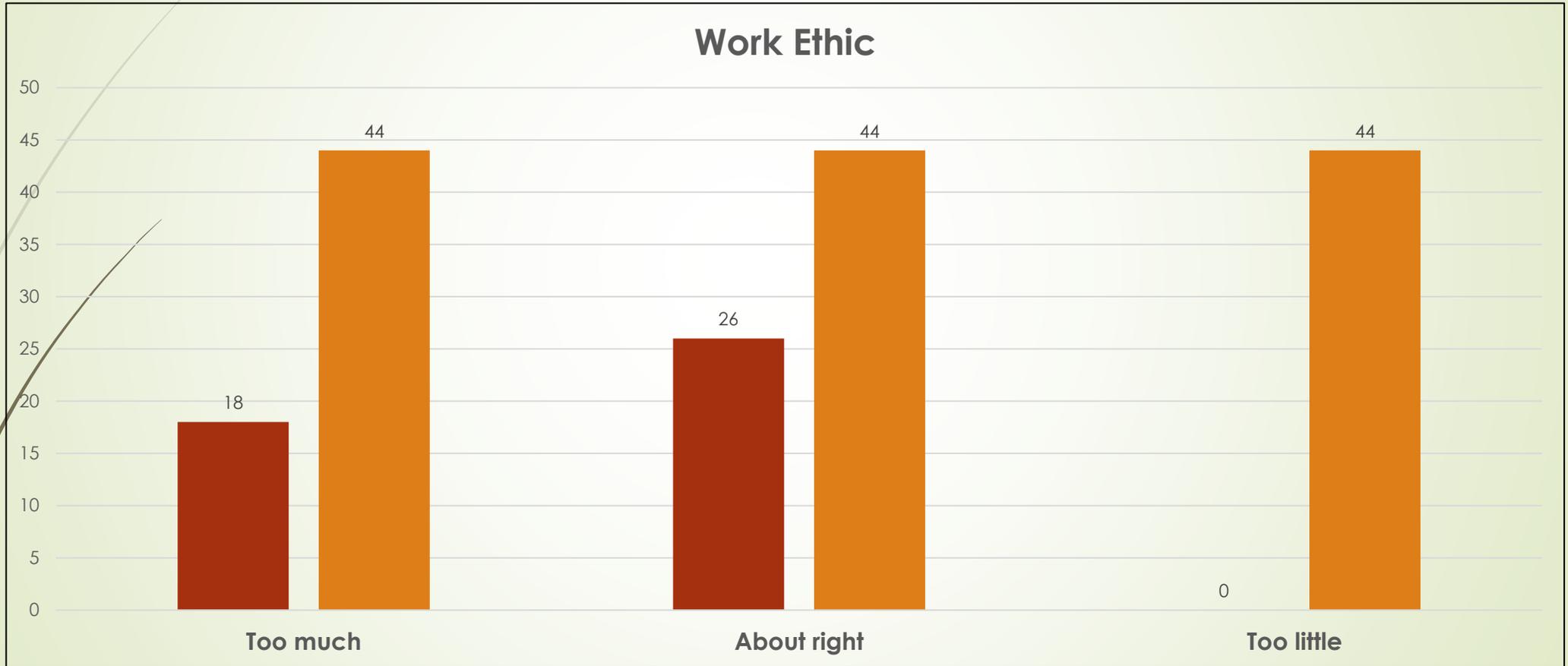
Number of responses - 44

Learning Equipment Hardware -Digital Device

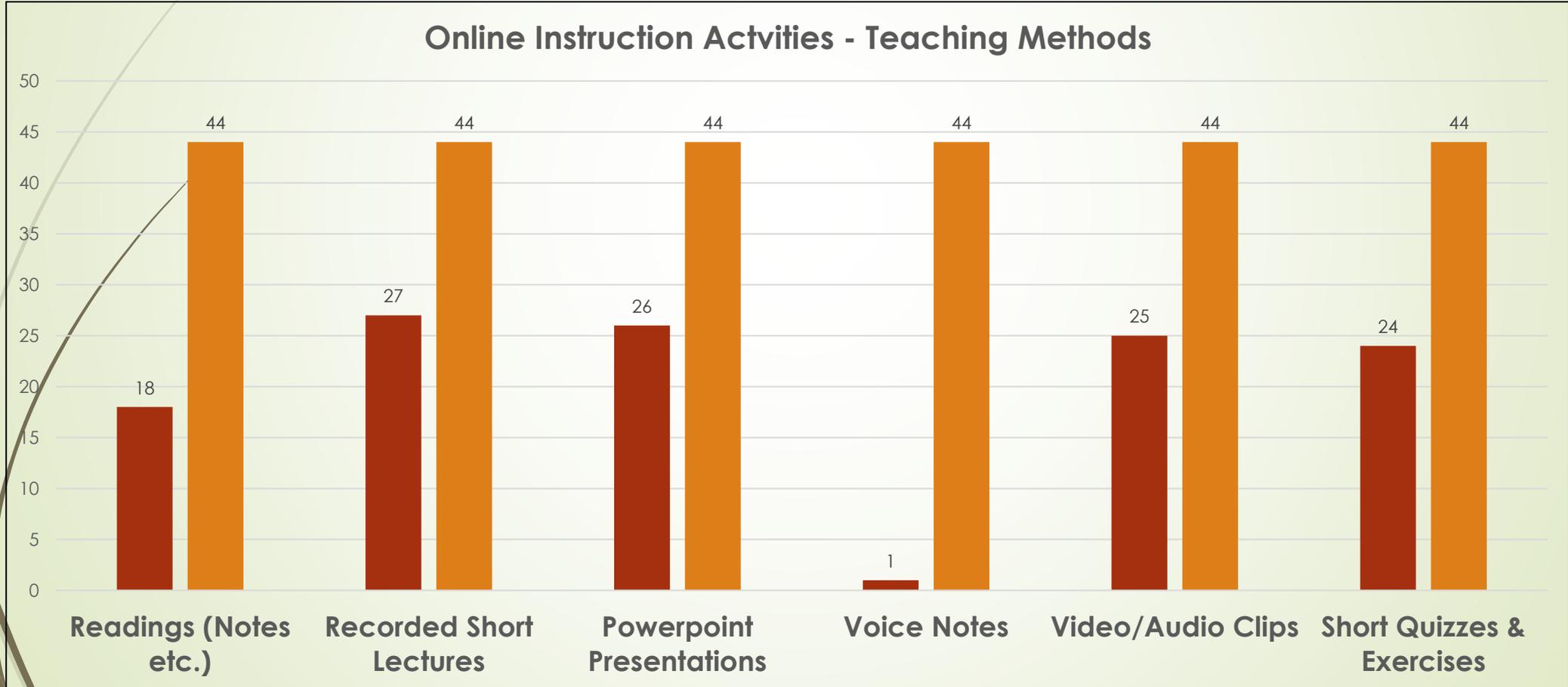
Smart Phone	43	44	98%
Laptop	18	43	42%
Tablet	2	42	5%



Amount of work			
Too much	18	44	42%
About right	26	44	59%
Too little	0	44	0%



Teaching Methods - Online Instruction Activities			
Readings (Notes etc.)	18	44	41%
Recorded Short Lectures	27	44	61%
Powerpoint Presentations	26	44	59%
Voice Notes	1	44	2%
Video/Audio Clips	25	44	57%
Short Quizzes & Exercises	24	44	55%



IMPLICATIONS AND CONCLUDING REMARKS

1. Instructional Practice – from both hardware and learning preferences (behavior) affects students **Self Regulating Learning**
Impacts nature of instructional material
Online instructor – adapts – changes- modifies- Pedagogy
- 2 Students with different purposes, motivations, and preferences may exhibit different behaviors when accessing these materials. These different behaviors may further affect their learning performance. These different behavior patterns were also associated with their motivation and learning performance (Liang-YiLi^aChin-ChungTsai 2017).
3. Correlate with Moodle logs - viewing videos, notes of lessons, etc. – number of hits, duration, interviews.
4. Professors and students to monitor the learning process and take agency for what is happening (it is not a course evaluation; it is a strategy to promote self-regulation skills) (Patricia, A. 2020)

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