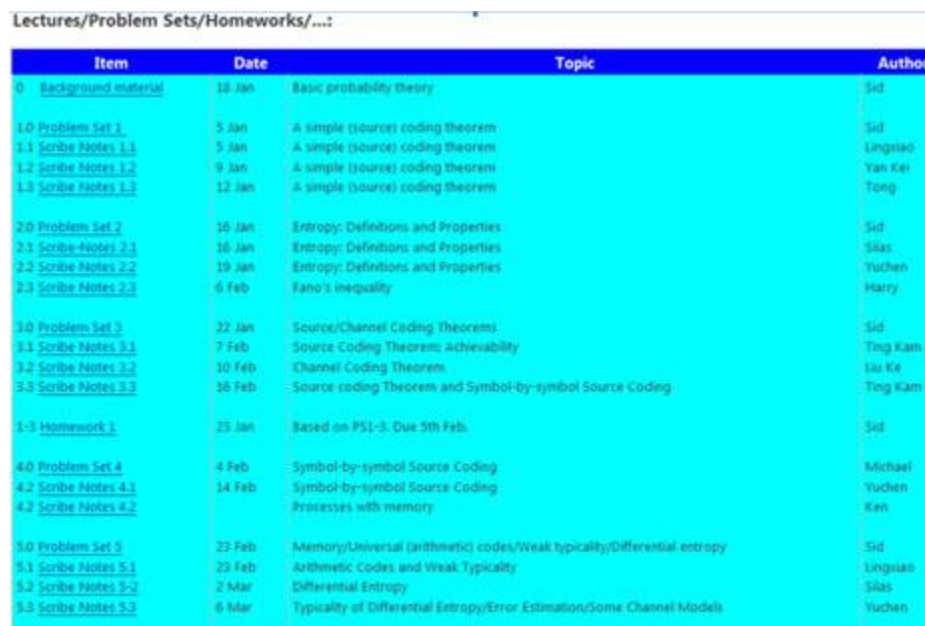# Using Wiki to create online exercise in engineering course

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Introduction of this learning activity

This paper outlines an interactive teaching process using in-class small group discussions, supported by a class Wiki and web-based student discussion forum. Notably, postgraduate students took part in shaping the online environment using Wiki functionality. As argued by several studies, a content focus does not appear to change students' understanding. Rather, the learning process and supporting educational structures appear critical. This paper examines some of these structures and learning strategies in the context of web-enabled technology.

The follow figure shows the structure of the Wiki site, which is based on a popular third-party and free Wiki platform called PBWiki (https://plans.pbworks.com/?utm_campaign=Wiki-link). The activities were organized as various Problem Sets prepared by the teacher. Students were invited to respond to these problem sets in the form of Scribe-Notes for which they were graded, and students could interact with each other by posting feedback on the Scribe-Note pages. The collaborative nature of the Wiki was stressed on the very first page of the site that stated: "the content is to be collaboratively created and edited by the students, tutor, and instructor of this course."

Lectures/Problem Sets/Homeworks/...:

Item	Date	Topic	Author
0 Background material	18 Jan	Basic probability theory	Sid
1.0 Problem Set 1	5 Jan	A simple (source) coding theorem	Sid
1.1 Scribe Notes 1.1	5 Jan	A simple (source) coding theorem	Lingxiao
1.2 Scribe Notes 1.2	9 Jan	A simple (source) coding theorem	Yan Kei
1.3 Scribe Notes 1.3	12 Jan	A simple (source) coding theorem	Tong
2.0 Problem Set 2	16 Jan	Entropy: Definitions and Properties	Sid
2.1 Scribe-Notes 2.1	16 Jan	Entropy: Definitions and Properties	Silas
2.2 Scribe Notes 2.2	19 Jan	Entropy: Definitions and Properties	Yuchen
2.3 Scribe Notes 2.3	6 Feb	Fano's inequality	Harry
3.0 Problem Set 3	22 Jan	Source/Channel Coding Theorems	Sid
3.1 Scribe Notes 3.1	7 Feb	Source Coding Theorem: Achievability	Ting Kam
3.2 Scribe Notes 3.2	10 Feb	Channel Coding Theorem	Liu Ke
3.3 Scribe Notes 3.3	16 Feb	Source coding Theorem and Symbol-by-symbol Source Coding	Ting Kam
1-3 Homework 1	23 Jan	Based on PS1-3, Due 5th Feb.	Sid
4.0 Problem Set 4	4 Feb	Symbol-by-symbol Source Coding	Michael
4.2 Scribe Notes 4.1	14 Feb	Symbol-by-symbol Source Coding	Yuchen
4.2 Scribe Notes 4.2		Processes with memory	Ken
5.0 Problem Set 5	23 Feb	Memory/Universal (arithmetic) codes/Weak typicality/Differential entropy	Sid
5.1 Scribe Notes 5.1	23 Feb	Arithmetic Codes and Weak Typicality	Lingxiao
5.2 Scribe Notes 5.2	2 Mar	Differential Entropy	Silas
5.3 Scribe Notes 5.3	6 Mar	Typicality of Differential Entropy/Error Estimation/Some Channel Models	Yuchen

The problem sets were clearly explained Mathematics questions.

Advantages of this learning activity

Presenting questions on the web had an additional advantage in that it facilitated convenient access to further explanations of key and related concepts. Providing links to other online resources and information that could assist students in solving assigned problems further enhanced this feature.

Another notable benefit was the fostering of creativity, through the general supportive atmosphere and absence of teacher control on the Wiki. Student presence was similarly reinforced by gentle language when commenting on each other's work, while the teacher's willingness to listen to students and consider alternative solutions modeled another desired attribute in the learning environment.

Feedback from teachers and students

Based on student feedback and performance, there is evidence that social interaction, both inside and outside the classroom, can be aided by the innovative use of groupware tools such as a wiki. There is also evidence that releasing control online to the students, the teacher can influence classroom dynamics in terms of better interaction between students, the instructor and course materials. The overall result is improved engagement, knowledge transfer and learning outcomes.