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teaching at a university**



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## Reading and reviewing articles as tool for teaching at a university

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### Abstract

Learning of university teachers and doctoral students is important for science and practice. We as a university teacher can ask: How can reading and reviewing a scientific article be used as a tool for teaching a scientific thinking and problem solving? We shall mainly analyze our about 30 years experience as a teacher of doctoral students by self-inspection. Good results, many doctors (34 at 2018) and positive side effects will support an idea to read and review scientific articles. Various arrangements for such doing are described.

### Introduction

According to our book (Järvinen 2012, p. 180) an introduction can be divided into six sub sections: 1. Description of problem domain and its importance, 2. A gap or conflict in the results and findings achieved this far, 3. Exact definition of the problem under study, 4. Presentation of (own) approach and its advantages, 5. Results and 6. Structuring the rest of the paper into sections.

(1) Our pre-assumption is that reading a scientific article can teach to a reader. The scientific articles can be arrange from the 'best' ones to not so good ones, e. g., by using the Association for Information Systems' (AIS) basket of eight (best ranked) journals. We have much followed this basket of eight journals from where we have selected most of our readings. Thus our articles to be read should be 'good' ones for scientific thinking and research work. We much appreciate to support an advancement of doctoral students.

(2) In IS (information systems) journals there does not normally exist a section for articles problematizing and solving problems in university IS teaching. This is a gap (cf. Sandberg and Alvesson 2011) we like to fulfill in this presentation.

(3) We have produced summaries of IS articles since from 1990. We have used those summaries as teaching tool. In addition, also our arrangements how you can utilize scientific articles in university IS teaching will be presented. These arrangements concern doctoral students, teachers and some other groups, too. This will happen by trying to find answers to questions what and how and moreover to whom can we identify and teach knowledge and structures in scientific articles.

(4, 5) We do not have any totally novel approach and we therefore cancel point 4. We can teach an importance of a certain journal, its way of presentation, some management of reviewing in journals. We understand how important for doctoral students is to learn themselves for stating a research problem, performing of literature review, a selection of data gathering techniques and analysis methods, identifying assumptions behind of the study, a whole structure of an article, style of writing, considering introduction and discussion sections.

(6) We have structured the rest of this article as follows: First we refresh our memory when we present main points of our earlier presentation in the AI + Society article 1998. Next we show some

amendments 20 years later. Thereafter learning of doctoral students, doctors and others are asked by survey and thereafter described. Finally we shall then discuss about our main results.

### **AI + Society article 1998**

Editor in Chief of AI + Society journal, Prof. Karamjit S. Gill from University of Brighton 1998 visited at Tampere in our seminar (started 1990) and asked me to shortly describe how do we read articles and how do we use them to support learning. I structured an article (Järvinen 1998) as follows: 1. Introduction, 2. Some positive aspects in the reviewing process and 3. Some other implications of the reviewing process. Teaching and studying was, to my mind, slightly differing from a normal use of scientific articles. To this end, I only shortly mention our main ideas and later describe the current version of our arrangements.

The introductory section was started as writing: "Any research does not start from scratch but is always based on earlier research. Hence junior scientists must know the earlier research on their problem domain and relate their contribution to earlier studies". It was also emphasized that a researcher can then develop more insightful questions out of a topic.

Most of our doctoral students were and are working in private and public enterprises and hence studying part-time only. They finished their graduate studies about 10 years ago. This means that they have more relevant practical experience but fewer contacts with scientific literature than full-time doctoral students.

Late 1990s our seminar was a half-day meeting once per month. Then three to four articles distributed at the end of the previous meeting (one month ago) were then summarized and evaluated. As a teacher I had prepared a three- to eight-pages long summary on each article. All the summaries/reviews concerning a certain article were distributed among participants at the meeting and then discussed. One of the student reviewers was then elected to polish her review for publication. The published summaries were yearly published as a report (Järvinen {IS reviews} 1990-2009, and later). A student will receive credits first by preparing her summary and review and then also by polishing and producing the final review version. A supervisor recorded her summary into a file and this file was organized in an alphabetical order of the first author. (The same later concerned a original article, too.)

We then (Järvinen 1998) found positive aspects of reviewing process by presenting some questions:

1. Which aspects are emphasized in instructions to write a review of the article?
2. To which aspects in the article can a teacher pay attention?
3. How can the article used as a learning environment at the seminar meeting?
4. How can polishing of the review support learning
5. How can doctoral students use review reports?

In Question 1 novelty is emphasized. In addition, survey articles are much appreciated. Moreover, two or three best articles from the leading ICIS (International Conference on Information Systems) conference report were selected. When a new type of selecting articles for reviewing was started, then the so called "must" articles, e.g., Ives et al. (1980), were selected. Also national researchers were supported by selecting their articles, and a certain highly ranked department and its researchers were appreciated in selection of articles. Similarly, the articles written by international stars were supported in selection.

Concerning Question 2, it is hoped that the article should first be summarized and then evaluated. It is emphasized that a summary will later be used as an own source. A doctoral student can relate this article to her own research domain and maybe later to utilize it in her own thesis. A teacher hoped that a doctoral student can identify a research approach used. Part-time students sometimes exploited new knowledge received through reading an article in their own teaching or work.

A teacher can in her own review pay attention to general, similar structures, e.g., the similar introduction sections and the similar discussion sections, and the whole structure of an article reviewed. She can present the article in a historical perspective. She can also characterize journal in which the article was published and evaluate goodness of the article.

At the seminar meeting (cf. Question 3) students can exercise their argumentation. Also different interpretations of a certain term, construct, method and model can be discussed. Students with extensive practical experience can relate a message of the article to their own affairs, and hence to present differences between nations and between organizations.

During preparation of the polished review (Question 4) a doctoral student must relate own views to different views of other students and to those views presented during the discussion in the seminar. The published review reports (Question 5) allow a new student more easily and quickly to achieve almost the same level as other participants in seminar. All the review reports can be considered as an organizational memory (Walsh and Ungson 1991).

Also some other "resources" were developed. As a supervisor I selected such reports that had different research methods, because every doctoral student must find a suitable research method. Many methods were collected to a book (Järvinen 1994). It was first written in Finnish, then supplemented and translated to English. Small amendments were added to the book form, latest 2011, 2012 and into electronic form 2018. - I as supervisor stored my summaries (in Finnish) and headings of the articles to two different files, and doctoral students can use them.

Some months ago we received an article prepared by Naarmala, Koponen and Rannila (2017). It partially contains a description of the same seminar that we are here rendering, but they are mainly concentrated on a whole program of doctoral students, not on articles only. The article (Naarmala et al. 2017) was produced without any contact with the author of the current paper. The content of Naarmala's article will supplement this paper and present a view of doctoral students on the whole their teaching. Naarmala, Koponen and Rannila have been doctoral students in the current program.

### **Some amendments and changes later**

We followed 10 seminars per year until 2009 and after that we continued 4 seminars per year and the reviewed articles were no more checked in the seminar. Our seminars were organized also in Pori (3 semesters 2000-2001, Jyväskylä two semesters (autumn 2003 and spring 2004) and longer in Seinäjoki (2002 - 2009) because participants in seminar from Seinäjoki were no more eager to come to Tampere. It was then more suitable for that I as a supervisor travelled from Tampere to Seinäjoki.

When our file of the Finnish summaries had many times referred to and when most of doctoral students liked to publish in English, late 1990s some highlights of the article reviewed were written to a supervisor's summary. These highlights were thereafter much used in theses and in other publications. Doctoral students really used the read articles, for as I remember the largest number of references from the set of read articles in a certain thesis was about 70 % of the total number of

references and the least one about 30 %. We copied some sentences from the original article into the highlight section in a summary and closed this citation with marks " " and associated the reference data and page number in brackets at the end of citation. It was then ready to copy into a thesis or a certain article as such. The set of titles of articles read was saved as a file (OTSall) and triplet (A, H, R) was marked after the title depending on whether abstract, highlights and review, respectively, were included into a summary. An English abstract and (English) highlights from an article and a review (English) of the supervisor plus possible an author's comments were saved into four files (OTSA-C, OTSD-H, OTSI-P, OTSQ-Z) corresponding the first author in alphabetical order.

A particular late amendment to the supervisor's review was an idea to ask authors' comments on the supervisor's evaluations. Hence, some or all the authors then have chance to more explain and argue their paper. The answers from an author were as such distributed in a seminar and/or included into a supervisor's review. The earliest time point of authors' comments was 2005. An author who replied to evaluation can be kept as a second teacher in a seminar or in the whole reviewing process.

A few of doctoral students have written their summary in English. I as a supervisor have such a view that it is profitable to write a summary in Finnish, for the text of an article will then be processed and carefully thought, not only copied from an article to a summary. Some doctoral students solved the problem in such a way that they wrote a summary in Finnish but their comments in English. Later they utilized their comments in English in their thesis almost as such or with very minor changes.

I as a supervisor distributed both my summary and review with some author's comments and the original article to doctoral students and doctors for their personal use. I thought that our readings and their summaries to doctors too are important, because our summaries may sometimes supplement doctors' knowledge and keep their view on research up-to-date. Some of my doctors were from universities of applied sciences and they also taught similar topics as we have read and reviewed. Our summaries gave some additional one for their teaching. Otherwise a certain summary often contained new knowledge in a condensed form, and all the doctors could use a summary to inform their partners, friends and others about new results.

Perhaps it was 2016 when this supervisor started to write her comments into the Finnish part of summary and in brackets (PJ: ...). A message in the brackets could either inform our critical comment or our emphasis about a novel and/or good solution on a certain point in the article. The latter functioned as teaching about a nice solution in the article. Expressions (PJ: ... about our critics helped us to write our comments in the review part of the summary (in English).

Some two or more years ago I as a supervisor started to distribute all the files of read articles (both original one and my summary) in connection with seminars to every doctoral student who had either a memory stick or a lap top with her.

Selection of articles was slightly changed 2000 and 2010 decenniums. Novelty is still emphasized, and method, literary review and writing articles are still selected and mainly from the AIS basket of eight journals. Some general type articles, e.g., positivist surveys are taken in order to refresh our mind, because they are the most common type of studies.

### **Learning of doctoral students, doctors, supervisor and others**

In this sub section we shall first present our survey process and its responses, and thereafter what some authors, some graduate students and we as a supervisor can learn from articles. To all the

respondents (our doctors, doctoral students and prof. Mikko Ruohonen) we via e-mail sent the following question: *Which kind of advantages or disadvantages do you see reading articles during doctoral studies and thereafter?* Hardy and Ford (2014, p. 140) stated that "surveys hinge on comprehension. If the respondent does not understand the survey question in exactly the same way as the researcher then the instrument is not measuring what the researcher intended." To our mind, we are sure that the respondents understood our question in the same way as we.

We received answers from 10 respondents. Answers as they stand in e-mail messages are then picked up. They seem to cover many different types of advantages in learning. We shall structure answers as follows: advantages from doctoral students' and doctors' point of view, disadvantages and Ruohonen's answer.

#### *Doctoral students (advantages)*

Our text below was combined from different answers, an idea after an idea. Hence our presentation might not be so fluent. At the beginning a *doctoral student* learned to read a text and know a writing style and understand of an article, later she learned to write and discuss about an article. A doctoral student evaluated that she will learn and keep new knowledge up-to-date, learn methods, academic writing, scientific language, learn to know basic articles and outlets of own domain and to critically evaluate articles. A certain doctoral student was glad that she has learned to bypass paying of article and to select articles. It is also possible to guess fashions and hypes, to see a development of concepts and phrases, and to learn how to use references. Somebody writes that she is satisfied that articles to be read are such ones that she will save her energy in concentration on 'good' ones, sometimes called 'classical' ones. Another student surprised that almost all the articles had a similar structure. She also found that in many IS articles there is the IMRD (Introduction, Methods and Materials, Results, Discussion) structure. She also says that the method book (Järvinen 2012) seems to have a certain emphasis in articles to be read. It seems to a particular respondent that the articles to be read concern some but not all the domains of IS. These articles have often been review articles. Sometimes a research domain of a certain doctoral student has played a main role in selection of a particular article. Discussions in seminars have opened an article more and taught setting a research question and argumentation. The articles to be read gave new content to teachers (doctoral students and doctors) in universities of applied sciences when they taught IS. Actually the articles read formed a database for teaching and scientific work. The articles to be read (mostly scientific) have lowered a gap between science and practice in our problems. To somebody's mind, the article to be read should be new, because we are interested in to know the newest knowledge and to apply it immediately. The articles read helped to evaluate journals and conferences (their value and topic) and they may also extend world view and show other points of view than mine. Somebody writes that she have met an article that she otherwise would not find at all. The articles read helped to understand how a supervisor writes a summary and how a doctoral student could do the same. Reading articles and writing their summaries lower threshold to write her own text. Peer group and mild competition support own work, i.e., "I shall be as competent as other one, too". - One aspect to be add is that a doctoral student can collect learning points by preparing summaries. Nobody of all the respondents did not remembered this aspects.

#### *Doctors (advantages)*

Qualified *doctors* told that reading and commenting articles have become a habit and it has brought such a will that she likes to follow up articles and keep her knowledge up-to-date about IS research projects. Somebody likes to read two articles per week on an average. She first likes read introduction and discussion then abstract, and if the article seems to be interesting, a whole text.

Reading articles helps many doctors to understand different meanings of IS terms in English. Articles helped somebody in her professional work and reading has continued during pension, too. Somebody says that it is interesting to follow a progress of IS research, e.g., interesting results and development of methods.

*Doctoral students and doctors (disadvantages)*

Many respondents (doctors and doctoral students) do *not* see any *disadvantage* on reading articles, and they like to read at least an abstract of article. A few say that if somebody continuously read articles, it will take a large part of time, and time is their scarce resource. Somebody likes to emphasize that reading, evaluating and preparing summary may take much time at the beginning and a moderate part later. Reading of articles is strongly competing how doctoral students and doctors like to use their free time. To read with enthusiasm may take time from the thesis.

*Prof. Mikko Ruohonen*

He proposed that there should be available "Pertti Järvinen doctoral research support portal" (PJ DOCS). This means that summaries of the articles read must be recorded into a portal and some tools and tables must be built for alleviating searching from a portal. (Summaries mainly in Finnish and some originals are now stored in an alphabetical order and parts (abstract, highlights and reviews) in English are separately stored, but still more facilities are welcome.)

*Some authors*

(Answers above were received from survey; knowledge in this sub section and later are based on authors' replies and my observations.) More than half of authors to whom we have sent our comments have found time to respond. Some very few of them reacted negatively and demanded that we shall write our own version concerning a topic of the article and then submit it for publication. In many positive answers authors both more explained their view and thanked about some mistakes or misprints found and promised to improve their text in the future. These results are based on responses of the authors and these are stored into summaries and can be found in IS Reviews nnnn reports edited by Järvinen

*Some graduate students*

In addition, I succeeded to get some graduate students, and they were happy that they could improve their draft of graduate thesis by using our reviews and originals.

*Supervisor*

We have selected our articles to read. At the beginning, we emphasized methodological papers (cf. Järvinen's book on research methods), thereafter literature review articles and how to write articles. In addition, some topics, e.g., outsourcing are taken into consideration. Some theory, model, framework, structure is also valued. We as a supervisor liked to learn how to perform scientific study, and we therefore gradually try to improve our own abilities there.

**Discussion**

Based on our experiences reported above we can say that reading scientific articles and preparing their summaries seem to produce much learning. Especially doctoral students but also others can

learn much. Burton E. Swanson (from Los Angeles) visited 1993 in Finland and he then showed a list of titles concerning about 200 IS articles supplemented with one sentence describing a content of an article. This is the only solution that is a bit similar as ours and that we know. We could ask whether English speaking IS researchers do not need longer summaries, or whether work of a supervisor to select articles to be read and to prepare a summary is too heavy for other supervisors?

We really hope that our description of arrangements for reading scientific articles is such presented that a university teacher in IS can herself build a similar system in her department and hopefully receive successful results in learning of doctoral students. To our view, reading scientific articles described above and learning based on articles might be externalized outside of IS, too.

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