A Report on the Quality of PhD theses in Education within Estonia

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Preface

This report covers theses written for the successful award of the degree of PhD in the field of Education within Estonia. It covers theses submitted under the University of Tallinn, the University of Tartu, Faculty of Education and University of Tartu, Centre for Science Education in the Faculty of Science and Technology, mainly during the period 2005-2009. No education thesis was defended in other Estonian institutions during this period.

The remit for this report is taken to be – considering criteria related to the quality of PhD theses, and in particular to differences in interpretations of the regulations governing the writing and presenting of theses, put forward guidelines and recommendation for the attention of PhD supervisors and PhD defence committees. Inevitably, the report will encompass the style of thesis being written (especially monograph versus summary of published papers) and in this aspect, endeavours to comment on the appropriateness of the direction taken. Specifically the report sets out to put forward a point of view and justify this in an appropriate manner. It then reviews a number of theses against these criteria and discusses, in a general manner, the findings.

A major purpose of this review is to provide guidelines to supervisors, PhD defence committees and opponents so as to raise the quality of education theses being presented for defence. As such, it intends to provide markers which supervisors can use to determine whether the thesis is of a sufficient high quality within specific components so as to be considered worthy of putting forward for defence. It intends to comment on the role of the defence committee and hence expectation of members on the committee. Also it intends to recognise the qualities expected of an opponent and how the opponent is expected to function in defence of the quality of education research in Estonia.

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Jack Holbrook
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Executive Summary
This report puts forward a suggested position with respect to quality expectation for PhD theses in the field of Education. The approach is based on the University of Tartu PhD regulations as applied to Education theses and the agreement between Universities to attain a quality of university education at a European, if not, a world level, through the establishment of common academic standards. The report identifies criteria on which to judge theses and reviews such theses from three separately established sources through which Education PhD theses have been defended successfully within the last 5 years. Comments are made based on these reviews, without specific references to any one thesis, so as to put forward overall conclusions and to suggest recommendation for moving towards greater common academic standards. The report, in general, suggests that all is not well with PhD theses in Education within Estonia. The ways in which the regulations are interpreted, and the quality of the theses, even within any one centre, are very variable, notwithstanding the stipulation that theses can be written in three different styles. Recommendations relate to greater clarity in the PhD regulations for theses written in the field of Education and to the establishing of guidelines to move towards a common interpretation of the regulations within the spirit of the agreement between the Estonian Universities to attain recognised standards. Recommendations pertain also to greater support for supervisors, enhancing the role of the defence committee so as to be more accountable for standards and to review the requirements and role played by opponents.

Regulations for PhD theses (University of Tartu)
From 2006, an agreement between Universities (includes University of Tartu and Tallinn University) indicates that the institutions will strive towards commonality in the awarding of academic degrees and this will be upheld each year at the Rector’s conference (see appendix 1).

The agreement clearly refers to upholding the regulations governing the award of a PhD. Key aspects of the regulations are indicated here (stipulated by the University of Tartu from 2008), but by virtue of the agreement being equally applicable to both Tartu and Tallinn Universities, the regulations are treated as general. A fuller text on the regulations is given in appendix 2.

Doctoral requirement.
1. This constitutes (1) an independent study published as a dissertation, (2) a series of publications accompanied by a summary report, or (3) a published monograph.
2. In general, the requirement also presumes three academic publications as a minimum;
   (a) in the case of publication series accompanied by a summary report, the requirement is a minimum of three articles in journals abstracted by ISI Web of Science/Thomson Reuters Web of Science, OR in other international scientific journals, OR collections with a registered code, international editorial staff, peer-review by an international board, international distribution area and availability and openness to input.
   (b) in the case of monographs, the requirement is a minimum of three academic publications, including at least one article introducing the results of the doctoral thesis in an international peer-reviewed journal or collection.
**Requirements for doctoral thesis.**

3. A doctoral thesis is an independent study which presents an **original argumentative solution** to a specific scientific problem and the results of which have been sufficiently **reflected in international professional literature**.

4. A thesis shall include:
   - An overview giving the essence of the problem discussed;
   - A formulation of the goal of the problem;
   - Arguments set forth for defence;
   - A description of the methods;
   - A course of solving the problem discussed and its evidence;
   - A conclusion;
   - A list of references;
   - An Estonian summary if thesis is in a foreign language, or a summary in a foreign language if the thesis has been written in Estonian.

5. The following scientific publications with research content are considered as suitable publications of the research in the doctoral thesis:
   - Articles in journals, which are indexed by *ISI Web of Science/Thomson Reuters Web of Science*.
   - Articles in journals which belong to category “A” or “B” of ERIH.
   - Articles in other international pre-reviewed leading scientific journals of the speciality, which has an international college, international distribution, indexed in several international databases and opened for contributions.
   - Articles or chapters in the publications of reputable international scientific publishing houses.
   - Monograph issued by internationally reputable scientific publishing house.

**Opponent and Defence Committee stipulations.**

6. One or two opponents, meeting the requirements for a supervisor of doctoral theses, from outside the university shall be appointed.

7. The defence of doctoral theses shall take place at the meeting of the defence committee as a public academic discussion and it may occur only if attended by the applicant and at least the opponent from outside the university.

8. A defence committee has a quorum if, including additional members, at least 6 committee members with appropriate PhD degrees, are present.

**Introduction**

Meaningful research in education is a scientific enterprise. It is dependent on scientific rigour for the outcomes to be of value. This suggests such research needs a structure, a clear focus and the seeking of evidence which is both obtained in a valid manner and processed reliably. A thesis, elaborating on such research, also needs to express this scientific rigour and thus be seen as a logical representation of the research process and its merit. In this sense, the thesis can be seen as ‘a story,’ presenting the research in a logical sequence highlighting its worth from initiation to justifiable conclusions.
One approach to examining theses in the field of education is to reflect on the stages of developments in the research and to consider each of these separately. This is the approach adopted here. Such an approach is not intended to detract from seeing a PhD thesis as a coherent model (Trafford & Lesham, 2002), but to recognise that the issue of standards are not only in examining the merits of the thesis as a whole, but also through considering the constituent parts required and the way they are interrelated to create the thesis as a whole. One common situation is that stipulated criteria for PhD thesis from Universities around the world do not usually exist. At best, Universities offer guidelines and any regulations indicating theses must be based on original research.

**Aspects opponents wish to see**

It is useful to consider what opponents wish to see from undertaking a PhD research study. These have been usefully listed as: (Trafford & Lesham, 2002).

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Conceptual clarity in the design, conduct and analysis of the research.</td>
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<tr>
<td>2</td>
<td>Intellectual appreciation of how underlying theories relate to issues in the research.</td>
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<tr>
<td>3</td>
<td>Engagement with the literature.</td>
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<tr>
<td>4</td>
<td>Grasp of methodology.</td>
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<tr>
<td>5</td>
<td>Coherence of argument.</td>
</tr>
<tr>
<td>6</td>
<td>Presentation of the thesis and compliance with academic protocols.</td>
</tr>
</tbody>
</table>

While the first 5 points relate to the research, it clearly suggests that the theses can be expected to relate to these aspects also. In fact, it is an expectation that the writer of the thesis illustrates:

- clarity in what the researcher wants to discover or prove (some form of research statement and/or questions which ends with a set of conclusions on the discovery/prove);
- the researcher’s contribution to knowledge (why do the research);
- the research design and methodology (why the chosen design; justification of the methodology);
- what answers/outcomes can be derived from the research.

The above recognises that PhD work, and hence the accompanying thesis, needs to attain an academic standard, although the level of ownership of the process, conceptual learning involved and the furtherance of this conceptualisation from interaction with others is not really indicated. Lesham (2007) gives a good indicated of the attainment expected at a PhD level (as opposed to lower operating levels) by associating this with:

| A | personal recognition and ownership of problems that inhibit development which are resolved when transformative learning revealed the nature of conceptual frameworks. |
| B | relational learning development that solves problems when the ‘community of practice’ enabled candidates to pass through their respective threshold of understanding. |
| C | individual and collectivist mediation through the interaction of the ‘community of practice’ to engender conceptual grasp. |

It is these qualities that form the focus of the academic standard. The supervisor clearly needs to play a major facilitating role in this direction, enabling ‘ownership’, raising the ‘threshold of un-
derstanding’ above that which an individual is likely to attain by themselves and providing opportunities for ‘collective mediation’ so that the researcher is challenged by suitable and usefully varied ‘communities of practice.’

If the above give an indication of the academic level expected, the following breaks down the thesis into constituent elements and considers quality at the level of the specified requirements.

Detailing Quality – what is required?

The Issue of Originality
The regulations identify a doctoral thesis as an independent study which presents an original argumentative solution to a specific scientific problem. But how is ‘originality’ defined in an educational setting, where the subject of the research tends to be people – teachers and students and the processes and interactions that affect them.

Clearly originality needs to relate to achievements at an academic level and perhaps this marks one major distinction between awards given at the Masters and PhD levels. The originality stipulation very much means that copying by translating an instrument, or instruments, from overseas into the local language and following the procedure used in another country to derive outcomes in a different setting cannot be taken as meeting originality criteria and therefore this by itself must be seen as inappropriate to be considered for a PhD.

If originality of thought is an essential component of research, this needs to be expressed through the thesis. It is an important component of ownership. A major stipulation of the thesis story is that originality needs to be highlighted and that without elements of originality, the thesis does not move research forward and thus serves little purpose. It is proposed that originality of the research must serve as a major overall requirement for the award of a PhD.

Expertise of the writer
The thesis needs to clearly represent the researcher’s ability as an independent researcher, separate from the work of the supervisor. While writing style and sequencing are not explicitly under test, the ability of the writer to tell the story in a clear and meaningful manner needs to be evident. The researcher needs to be sufficiently knowledgeable, especially in the specific area of the thesis – even to the degree that the researcher is more knowledgeable than the supervisor – to be able to express originality and not put forward work substantially copied from others, or developed by the supervisor. As the thesis needs to be seen as a scholarly piece of work, the expectation is that the researcher can explain any aspect and be capable to analyse any argument put forward in the thesis. The researcher is required to be knowledgeable in the conceptual frame of the research as a whole, as well as in the processes utilised, and analytical procedures applied, to derived outcomes in the research. In the narrow field related to the research findings, it is proposed that the researcher is expected to be more knowledgeable than anyone else.
In representing the expertise of the writer, the expectation is that a thesis in the field of education is divided into chapters, or sections and that these sections are indicated by means of a content page. As a further expectation, in which the thesis is a story, the content page is expected to show the flow of the thesis from the initial pages to the conclusions put forward at the end. As such, the thesis is expected to be written with the reader in mind and presented in such a manner that enables the reader to appreciate the evidence and strengths of the arguments being put forward. While tables, charts and diagrams are not essential, these can be expected to add clarity to the thesis and are thus seen as welcome components to be strongly encouraged by supervisors. Clearly repetition of background, the work of others, or arguments based on the findings from the research do not assist the reader in following the story and hence repetition is not expected. What is expected is a thesis with an easily recognised flow, for example, as suggested in the regulations (English terminology taken from the official translation):

- An overview giving the essence of the problem discussed;
- A formulation of the goal of the problem;
- Arguments set forth for defence;
- A description of the methods;
- A course of solving the problem discussed and its evidence;
- A conclusion;
- A list of references.

The Beginning of the Thesis

All theses need an introduction (even if not specifically named as such) and it is reasonable that this is recognised as ‘setting the scene.’ It is the start of the story. It can be expected to point to:

(a) the area of research (providing background or the ‘what’ which triggers the research),
(b) the area of concern, the issue or the problem without a known solution, together with
(c) the importance of identifying an appropriate outcome (the ‘why’ to the research) and also
(d) what the research is aiming to explore so as to seek answers (the so-called research questions).

In this sense, the beginning of the thesis is an overview giving the essence of the problem to be tackled. Section 16.1 of the University of Tartu PhD thesis regulations states this (although in Estonian it states ‘ülevaadet uurimisprobleemi olemusest’ – indicating the research nature of the problem). While the ‘what’ involves the inclusion of background, care is need that this does not extend far beyond the realm of the research as this will have no bearing on the research being undertaken and becomes essentially redundant. It provides a distraction to the story being told.

The ‘why’ is obviously important and indicates the purpose in undertaking the research in the eyes of the researcher and hence its value, or need. The why may also need background information so as to support the researcher’s rationale for seeing the value of the research.

Research questions focus the thesis on the problem or problems to be addressed and provide the major direction for the research. As such it is crucial that the research questions come early in the story-telling, narrowing down the focus and ensuring the thesis is not a ‘tell all’ about a topic as could be the case in a chapter of a book. Section 16.2 in the University of Tartu PhD regulations indicates the need to put forward the research task (‘uurimisülesande püstitust’). It is considered
unfortunate if the research questions are taken to be the same as putting forward aims or objectives, as the latter are much broader and indicate the descriptive scope of the work. If the only indicators for the task are aims/goals, there is a tendency this leads to a data gathering exercise, rather than focussing on the answering of important research questions. After all, the thesis is explicitly tied to research.

The Work of Others – findings, interpretations, theories etc from prior research
Although not explicitly mentioned in the regulations, the researcher, in carrying out original research, inevitably needs to be aware of the work of others, the problems they have addressed and the conclusions they have drawn. In education, the conclusions are often depended on the situation and are often derived form research which is qualitative in nature (even if quantitative analytical methods are employed). Being aware of the work of others and the conditions under which the research was undertaken, together with its limitations, enables the research to be guided by the ‘community of practice’ to be better able to design the research and argue the outcomes.

The work of others comes through a review of the literature. It is a crucial part of the work of the researcher in ensuring originality of work. A record of the literature review is not intended to be an opportunity for the thesis to include all that can be gathered on a subject. Nor is it an opportunity to simply restate definitions from others, their drawing together of meanings, or their illustration of models, theories and approaches; all of this can be indicated through appropriate summarising and referencing. But it is an opportunity to express points of view concurring with, or refuting, outcomes by others. Clearly it is only necessary to include key features, which put forward important points, issues, directions of potential relevance to the research at hand, thus ensuring the exact expressions or viewpoints are taken into account. Even so, references and quotes are not expected to be included as separate entities; they need to be embedded within a coherent argumentative whole, which ‘sets the scene’ for the current understanding, or controversy in the given area.

Thus the review of the literature within the thesis is not intended to be a collection of statements and suppositions. It is intended to be a discussion of the work to date. It needs, and should, contain views put forward by the researcher which add to the rationale for the research and aids subsequent discussion in the thesis related to the research undertaken by the researcher. The review of the literature is purposely selective and references are only included because they play a positive role in the arguments being put forward in the thesis. Nevertheless, key arguments need to be exhaustively reviewed as these will play an important role in the research design and subsequent direction of the research, not only in terms of the conceptualisation of the problem within the given field, but also in methodological and analytical aspects where they are of an unusual or unique nature. Thus, while this chapter or section of the thesis may well be long, it needs to be well structured, make suitable use of sub-headings and be understood by a person knowledgeable in this area of research e.g. the opponent, as a meaningful review.

A final important aspect is that the review needs to take note of the latest developments in the field and take on a worldwide perspective, irrespective of whether the thesis is written in Estonian, or English. Research cannot be confined solely to local informational documents, chapters written in books or conference proceedings associated with limited refereeing of articles.
Research Methodology
Clearly the methodology is an important component of the thesis, providing an appreciating of the parameters under which the research is being undertaken. Section 16.4 of the University of Tartu PhD regulations identify this as ‘metoodika kirjeldust’ (methodologies used). The type of research design and the components of the methodology to be selected, controlled or manipulated needs to be very carefully and precisely described and the reasons for choices made need to be explicit. A key term here is ‘validity of approach’ and the manner in which this is determined and assured is an important component of the sample taken, instruments used or the design employed. An omission of validity issues in the thesis at this stage will affect the whole research and can be expected to be a major aspect on which the defence opponent will focus. This very much applies to the inclusion of triangulation. Original instruments should be included in the thesis, perhaps as an appendix, or in a published paper associated with the thesis.

Results and Analysis
The research task-solving process and the providing of evidence for this is section 16.5 in the University of Tartu PhD regulations (‘uurimisülesande lahendamise käiku ja tõestust’). Raw (unprocessed) data collected for the research needs to have a high degree of reliability. While reproducibility is rarely possible, measures of reliability are important and need to be quoted. Raw data should be given in the thesis (perhaps in an appendix), unless, that is, the thesis is based on papers, when the reliability of data may well be written in a specific paper (processed data such as mean and standard deviations are rarely the starting point for findings in a thesis).

It is important that the analysis procedure is suitable for the purpose used, is reliable and treated in a manner that enables meaningful outcomes to be portrayed (parametric approaches are not used on non-parametric data). This hopefully applies mainly to the manner in which the analysis is displayed in the thesis, rather than to the procedure adopted, but the researcher can expect the opponent to question any analytical procedure adopted and be required to give meaningful responses. By included reasoning for procedures in the thesis, this can make the defence a much easier situation for the researcher.

Discussion
The uniqueness of the thesis is largely indicated in the discussion, based on the research carried out and the analytical findings gained. Arguments defending the research carried out are a regulatory requirement (section 16.3 in the University of Tartu PhD regulations – ‘kaitsmisele esitatavaid väiteid’. It is here that a high degree of originality can be expected and hence the importance of putting forward sound arguments, in a logical manner. At this stage, it is clearly inadequate to simply say that findings, or even analyses, agree with the research of others. It may be the start of an argument towards a new point of view, the building of the work of others towards a new or refined model, or an opportunity for the researcher to give theoretical meaning, a new interpretation, express value of new findings and so on. The discussion section is thus not a description and most certainly not an occasion to repeat in words what has been expressed in tabular form in the research findings, or analysis. The thesis story in this section or chapter takes on a personal direction of its own, backed up by valid data and strong argumentation. The justification here leads to the validity of the conclusions made. It is a key element in the thesis.
**Conclusion**

The conclusion is almost a ‘let-down.’ It is a short summing up of the outcomes and for this is expected to directly relate to the research questions. The conclusion is a regulatory stipulation (at least in the English version for the University of Tartu PhD regulations, 16.6 – it is stated as ‘kokkuvõtet’ in the Estonian version) and must therefore be included in the thesis. A summary cannot be taken to be the same as a conclusion, unless the summary is very explicit in its reference to the research outcomes and does not cover the work involved in undertaking the research as a whole (this is an additional required in the regulations – 16.8). An important requirement for this component of the thesis is clarity of the research outcomes as initiated by the research questions and pursued through the research tasks.

The conclusion can be expanded to indicate aspects such as limitations, implications and possible recommendations stemming from the research. However care is needed that, especially in the case of recommendations, they do actually stem from the research itself.

**The References**

References are another regulatory requirement (section 16.7 in the University of Tartu PhD regulations – ‘kasutatud kirjanduse loetelu’. These can say much about the research and the thesis story. The quantity and quality of references can give an impression of the width of the study, the depth of the study in a given area, the coverage of up-to-date research by others and whether the references are taken from serious sources, or are, for example, indicate documents that provide information but little more. Not only are references important, but they are crucial if the researcher is not to be accused of plagiarism. No thesis can be accepted that plagiarise the work of others and great care is thus essential that all ideas from others are referenced.

References need to be indicated in a uniform manner, usually following a stipulated format. Within the field of education the format for references often follows that indicated in the American Psychological Association (APA – 5th edition). This lists reference by authors and year of publication in the text (in brackets) and gives references in alphabetical order by first author.

**Estonian/Foreign Language Summary**

The regulations – 16.8 – stipulate a summary of the different components of the thesis is required written in Estonian, if the thesis is written in another language, or written in another language if the thesis is written in Estonian. The other language is expected to be English, noting the richness of the educational research literature in this language.
Suggested Criteria for Evaluating the Quality of Theses in the Field of Education

Although there are no specified quality criteria for a PhD study, the following components are put forward as recommended guidelines. The sections are not necessarily intended to represent chapters or sections in the thesis but are used here for convenience. The components indicate aspects of the study to be specifically evaluated by the opponent for the thesis defence, although the component titles are not necessarily appropriate.

<table>
<thead>
<tr>
<th>Section</th>
<th>Components expected</th>
<th>Elaboration of expectation</th>
<th>Intellectual demand</th>
<th>Originality</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>Originality</td>
<td>A unique and original piece of work.</td>
<td>Ownership</td>
<td>TELLING THE STORY</td>
</tr>
<tr>
<td></td>
<td>Contribution</td>
<td>Exhibits high degree of knowledge/expertise in the specific area of study.</td>
<td>Conceptual understanding</td>
<td>EXPERT (in this area)</td>
</tr>
<tr>
<td>Introduction</td>
<td>Problem identified</td>
<td>Clear indication of problem(s) and hence the reason for the research.</td>
<td>Why do the research?</td>
<td>VISION STATEMENT</td>
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<tr>
<td></td>
<td>Research target</td>
<td>Research direction clearly stated in terms of specificity and attainability (research questions and/or research hypotheses indicated).</td>
<td>What is the focus of the research</td>
<td></td>
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<tr>
<td>Theoretical background</td>
<td>Work of others</td>
<td>Degree to which the background covers the range of components on which the thesis draws and the appropriateness of the given depth of treatment for each component.</td>
<td>Interlinking with the literature</td>
<td>IDENTIFYING THEORETICAL CONSTRUCTS</td>
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<td></td>
<td>Suitability/up-to-date</td>
<td>Suitability of sources appropriate to coverage of developments in the field/sources are up-to-date</td>
<td>Intellectual appreciation of how underlying theories relate to issues in the research</td>
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<tr>
<td>Methodology</td>
<td>Sample taken</td>
<td>Appropriateness of type/size/representativeness of sample taken, plus justification.</td>
<td>Grasp of sampling theory, especially for quantitative studies</td>
<td>STRATEGY/PLAN</td>
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<tr>
<td>Instrumentation used</td>
<td>Appropriateness of instruments with respect to selection, creation, translation, triangulation with justification.</td>
<td>Justification of choice of instruments</td>
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<tr>
<td>Validity issues</td>
<td>Issues addressed with respect to the sample, instruments used and method(s) of undertaking research.</td>
<td>Justification of quality indicated, especially for instruments</td>
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<tr>
<td>Reliability issues</td>
<td>Issues of reproducibility, triangulation and statistical aspects – where appropriate – addressed.</td>
<td>Suitability of raw data utilised</td>
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<tr>
<td>Outcomes/findings</td>
<td>Results</td>
<td>Conceptual clarity</td>
<td></td>
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<td></td>
<td>Analysis</td>
<td>Appropriate justified</td>
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<td></td>
<td>Analytical procedures utilised are appropriate and valid for the sample used. Statistical procedures, if used, are meaningful for the sample/phenomenon and suitably applied.</td>
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<tr>
<td>Discussion</td>
<td>Originality</td>
<td>Coherence and depth of argument to derive new knowledge</td>
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<td></td>
<td>Discussion covers both positive and negative aspects and brings a justified individual’s perspective to the issue.</td>
<td>MEANING MAKING</td>
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<td></td>
<td>Relevance</td>
<td>Interrelates to the literature, but gives a personal viewpoint</td>
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<td></td>
<td>Discussion is sufficiently extensive to cover the major components identified as outcomes.</td>
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<tr>
<td>Conclusion</td>
<td>Conclusions</td>
<td>Relationship to research questions asked</td>
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<td></td>
<td>Any limitations of the research are indicated.</td>
<td>DRAWING CONCLUSIONS</td>
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<tr>
<td></td>
<td>Recommendations which are put forward, where appropriate, are meaningful.</td>
<td>Especially related to suitability of scaling up outcomes</td>
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<td>Recommendations are clear, specific and address the research targets.</td>
<td>Relate to the research findings only</td>
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<tr>
<td>References</td>
<td>Appropriately presented</td>
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<tr>
<td></td>
<td>References are appropriately presented. And conform to a single style.</td>
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<tr>
<td></td>
<td>Emphasis</td>
<td>Degree to which references relate to the 5 areas of value as indicated in the regulations of the University of Tartu.</td>
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</table>
Applying Criteria for PhD Studies in the Field of Education to Theses defended 2005-2009

\( \sqrt{\ } = \) present in the thesis in a recognised format (judged as appropriated)

<table>
<thead>
<tr>
<th>Section</th>
<th>Components expected</th>
<th>Identified in 20 Estonian Education Theses defended in the last 5 years</th>
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<tbody>
<tr>
<td></td>
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<td>1</td>
</tr>
<tr>
<td>OVERALL</td>
<td>Originality</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Contribution</td>
<td>√</td>
</tr>
<tr>
<td>Introduction</td>
<td>Problem identified</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Research target</td>
<td>√</td>
</tr>
<tr>
<td>Theoretical background</td>
<td>Work of others</td>
<td>√</td>
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<tr>
<td></td>
<td>Suitability/up-to-</td>
<td>√</td>
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<td></td>
<td>date</td>
<td>√</td>
</tr>
<tr>
<td>Methodology</td>
<td>Sample taken</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Instrumentation</td>
<td>√</td>
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<td></td>
<td>used</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Validity issues</td>
<td>√</td>
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<td></td>
<td>Reliability issues</td>
<td>√</td>
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<tr>
<td>Outcomes/findings</td>
<td>Results</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Analysis</td>
<td>√</td>
</tr>
<tr>
<td>Discussion</td>
<td>Originality</td>
<td>√</td>
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<tr>
<td></td>
<td>Relevance</td>
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<td>√</td>
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<tr>
<td></td>
<td>Emphasis</td>
<td>√</td>
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</tbody>
</table>

See appendix 3 for the list of theses reviewed (sequence does not correspond)
General Evaluative Comments on the review of Criteria

**Originality.**
The theses are original in the sense that they relate to Estonian data. However, there is the suspicion that some theses are adopting ideas or instruments from others and simply applying these in an Estonian context with little or no originality in the analysis and discussion of the findings. It is suggested that supervisors need to pay much greater attention to originality of theses and its meaning. In raising standards, the issue of a suitable opponent needs to be raised. It seems many theses have not been seriously challenged and this forms a major cause of the wide diversity in the standards of theses. Attention is also raised to strength of publications supporting theses and the degree to which these are being challenged by defence committees and opponents.

**Contribution.**
The extensive reference list from the literature and the detailed comments on the literature cited suggests that the researcher has ample opportunity to build up and extensive body of knowledge within research topic. Whether this is actually the case is of course unknown from the written theses. It is uncertain also how far supervisors see expertise in conceptual knowledge in the area of the thesis as a matter of necessity.

**Problem identification and research target.**
These components are linked to – why do the research? From the table, I am suggesting I was not able to identify clearly stated problems and research questions (hypotheses) in most of the theses I examined. Where the thesis is not clearly based on a problem and the research questions or hypotheses are absent, there tends to be a lack of cohesion between the elements of the thesis and the conclusions tend to be absent or difficult to extract. Also where a problem was not identified, the research tends to be a “study of …” and the reason for studying aspects that were actually undertaken tended to be covert. It seems strange that research is undertaken just for its own sake and that supervisors do not pay more attention to ensuring researchers relate their research to an identified need.

**Background to the research.**
By and large the reference to the literature in the thesis I examined were, in my opinion, extensive, although I did not examine the relevance of the literature chosen. In most cases, up-to-date literature is covered (at least 10% references were dated in the last 5 years before the defence), which I suggest points to the relevance of the research area for the education research community. The table below indicates the number of references quoted in each of the first 6 theses and also the number related to 5 years prior to the thesis being submitted.

There is, however, the danger that this section becomes too wide and moves from a review to support the research being undertaken to a comprehensive report of the work undertaken within the field. In such cases the review of the literature plays little part in developing the research study and in guiding the discussions of outcomes. It seems more discussion among supervisors is
needed to reflect on literature review needs in the various types of theses. In this regard it was noteworthy that few theses discussed the literature in methodological aspects.

<table>
<thead>
<tr>
<th>Year of references</th>
<th>Number (%) references identified in 6 theses, arbitrarily sampled</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
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<tr>
<td>Year 0 &amp; -1</td>
<td>13</td>
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<tr>
<td></td>
<td>8%</td>
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<td>-2</td>
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<td>1%</td>
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<td>-3</td>
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<td></td>
<td>2.5%</td>
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<td>-4</td>
<td>4</td>
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<tr>
<td></td>
<td>2.5%</td>
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<td>-5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.5%</td>
</tr>
<tr>
<td>TOTAL REF.</td>
<td>158</td>
</tr>
</tbody>
</table>

Another concern in some theses was overlap. The same concern or introduction was repeated across chapters. This indicates poor planning of the theses. This is illustrated further in some theses by references continually appearing in all chapters as if the work of the researchers is subservient to the work of others and lacks originality.

**Approach to data collection (sampling and instrumentation).**

While a number of theses covered in this review indicated the research sample and how it was obtained, most theses did not consider issues related to sampling such as pointing out that outcomes obtained from purposeful samples would have limited applicability beyond the frame of the sample. In most cases the instruments were well described, but lacked considerations of validity (see next section).

**Validity and reliability.**

Validity and reliability issues were not included in most of the theses I examined, yet very few of the theses was quantitative in nature. Triangulation was only specifically mentioned in one thesis. A lack of attention to validity and reliability issues substantially lowers the quality of the theses and all instruments, even if a translation, require validation. Reliability of the data collected is also an important consideration, especially when non-return of questionnaires, or non-completion of all aspects of an instrument are concerned. I suggest that validity and reliability are so important that supervisors, as well the defence committees, should be encouraged to give these much more attention. It is surprising that both the defence committees and also the opponents allows theses to be successfully defended without due regard to validity and reliability issues.

**Results, findings, outcomes, analyses.**

Although most theses included results and analysis, claims of significance or other checks were less visible. Also, it was not always possible to examine the raw data, either in the theses or accompanying papers.

**Discussions.**

By and large, the discussion component was a major area of weakness in the theses I examined. A major factor in this was the originality of the points being made, reflecting on differing points of
view, where appropriate. In many cases, well reasoned, personal comments, showing the expertise of the researcher, were missing and the discussion was limited to how far the outcomes comply with the thinking by others. And it is the discussion section where it is expected that care is taken to ensure findings are not applied beyond the limits of the representativeness of the sampling. There seems to be some uncertainty, based on the regulations, as to the importance of the discussion component, partly as section 16.3 in the University of Tartu regulations precedes components such as methodology used.

It is clearly insufficient for the discussion to repeat the findings (this was tendency in some theses) and the focus of the discussion, I suggest, needs to relate more to the implications of the findings. In many cases the discussion is weak – it basically says the results obtained are in line with the guidelines, theories, models put forward by others. In this case it is not a discussion and the interpretation is that the research is simply a copy and has no originality. In other theses the discussion needs strong analytical insights, but these were missing. This especially applied to the ethnographical type research. The concern shown here for the discussion in many theses raises a concern about the expertise of opponents for Education theses in Estonia.

Conclusions.
A number of the theses examined did not indicate conclusions clearly, did not give limitations and did not indicate recommendations/implications in a meaningful way or sufficiently confined so as to relate to the research findings. Summaries were given in some theses in place of conclusions which poorly related to the research outcomes and tended to place more emphasis on the approach. There seems to be some ambiguity in the regulations related to the need to include a conclusion in the thesis. The issue of a suitable and succinct conclusion needs greater attention by supervisors and defence committees and it is surprising that opponents of theses are not requiring more in this regard.

References.
References of merit are seen as (University of Tartu regulations, section 18)
- Articles in journals, which are indexed by *ISI Web of Science (to be modified to Thomson Reuters Web of Science)*,
- Articles in journals which belong to the category “A” or “B” of ERIH;
- Articles in other international pre-reviewed leading scientific journals of the speciality, which has an international college, international distribution, indexed in several international databases and opened for contributions;
- Articles or chapters in the publications of reputable international scientific publishing houses;
- Monograph issued by internationally reputable scientific publishing house.

All theses examined followed a uniform manner. Most theses examined consistently stuck to one style. A number of theses heavily drew from publications not listed above e.g. Ministry of Education documents, conference proceedings, article and chapters in non-internationally recognised journals/books.
Conclusions derived from the Evaluation

The standards of theses vary greatly in quality. This is not only across institutions, but also within the same institution. This suggests that greater steps need to be taken to:

1. achieve greater compatibility in interpreting the PhD regulations; simply having the same regulations across the different Education research groups seems not to be sufficient.
2. determine whether modifications to the regulations are needed (perhaps as a special case for Education); for example, should ‘järeldus’ be used instead of ‘kokkuvõte’ for conclusion?
3. identify ways to support supervisors in carrying out their tasks, particularly with respect to strengthening theses in line with (a) originality; (b) expertise; (c) why do the research; (d) what constitutes appropriate literature sources; (e) validity and reliability issues; (f) discussion of findings; (g) what constitutes a conclusion and limitations; this is particularly important noting that theses successfully defended in 2008/2009 were not necessarily an improvement on earlier submitted theses.
4. seek ways to strengthen the defence committees to more appropriately ensure theses, which are submitted for defence, are of a sufficiently high quality, as suggested by the joint Universities agreement. It is recommended that defence committees should ensure theses (a) meet the regulations in such a manner as to relate to the spirit as well as the substance of the common agreement between Universities; (b) are well structured, without undue repetition and written in an acceptable style; (c) are balanced in terms of the extend of the literature review and the academic discussion based on research findings to which the literature is an interrelated component; (d) meets validity and reliability expectations in the specified methodology and (e) does represent a scholarly piece of work.
5. ensure only suitably qualified experts are appointed as opponents for PhD theses in Education, in particular with respect to the strength of the thesis in (a) research design for the problem being tackled, (b) the relevant literature coverage, (c) validity and reliability of methodology and data collection and (d) adequacy of the academic argumentation in support of the originality and quality of the research.

Recommendations for Future Action

1. Circulate this report to all supervisors (potential supervisors) in the field of Education, defence committee members, vice-rectors for academic affairs and to the committee for quality control for Universities in Estonia with a view to seeking comments on its substance.
2. Present this report to a meeting of supervisors so as to (a) finalise the report by removing inaccuracies, (b) adding omissions and (c) discuss findings, if necessary highlighting areas of concern by specific reference to actual theses which have been successfully defended.
3. Take steps, in conjunction with supervisors, to recognise the need to raise the quality of PhD theses and to explore ways in which this can be achieved across all institutions in Estonia which are involved in the supervision of PhD theses in Education.
4. A further aspect, not raised in the substance of the report, is the issue of defining an Education PhD. It is suggested there is a need to clarify when, for example, a sports related
thesis is within the boundary of expertise in the field of Education (e.g. is sports coaching an integral part of Sports Science, or not) and also when a thesis, giving extensive coverage of historical events, can reasonably be said to meet Education requirements.

5. Consideration should be given to publications acceptable for defence of an Education thesis: is it reasonable at this time to accept any publication written in the Estonian language and can an article appearing in an electronic, on-line journal, published in the Baltic States, be considered suitable as an international publication?

6. As it was noted that in some cases the overseas opponents could not operate in the language of the thesis and also the defence of some theses were held in a language other than that of the thesis itself, it is recommended that greater consideration be given to the role of the opponent in upholding the quality of thesis and especially in the manner and the extent to which they are expected to operate.

References
Appendices

Appendix 1
Agreement between Estonian University
From June 2006, it was agreed that:
1. The Parties shall harmonise the quality requirements for academic degrees being awarded.
2. The Parties shall bring the awarding of academic degrees into conformity with the provisions of this Agreement.
4. Each year in September the Rectors’ Conference shall discuss how the Agreement was followed during the previous calendar year.
5. The Parties shall continue the cooperation to develop a single quality system which shall be established by successive quality agreements.
6. The Parties encourage all Estonian universities to join this Agreement.

Appendix 2
Requirements for doctoral theses (as stipulated by University of Tartu, 2008 – selected aspects only)
12. A doctoral thesis must be an independent research or developmental work which presents an original solution to a significant problem in the respective field of research or life.
14. A doctoral thesis shall include a summary of the objectives, research methods and results of the doctoral thesis written in a foreign language when the thesis is in Estonian and in Estonian when the thesis is in a foreign language. The summary shall be available in electronic form.
15. If not restricted by law or contract, the publication of results is one of the main features of a doctoral thesis. In general, a doctoral thesis consisting of a research work presumes the publication of three academic publications at a minimum. In the case of publication series accompanied by a summary report, a minimum of three articles in journals abstracted by ISI Web of Science or in other international scientific journals or collections with a registered code, international editorial staff, peer-reviewed by an international board, international distribution area and availability and openness to input shall be required. In the case of theses and monographs, a minimum of three academic publications, including at least one article introducing the results of doctoral thesis in international peer-reviewed journals or collections shall be required.
16. A doctoral thesis may be approved for defence if the articles forming the basis of the thesis have not yet been published but there is an official confirmation of the acceptance for publication.
17. In the case of a published monograph no separate text of a thesis is required.
18. A university shall ensure the availability of the full text of doctoral theses to all parties of the Quality Agreement at least one month prior to the defence of the doctoral thesis, except in special cases provided by law.
Defence of theses
19. One month prior to a defence, the university shall display on its website the information about the time and place of the defence of a doctoral thesis, a link to the summary of the doctoral thesis and reference to the availability of the full text of the thesis; in art disciplines, also the information about presentations and displays of creative activity.
20. To a master’s thesis, one reviewer/opponent or, in exceptional cases, two reviewers/opponents holding an academic degree at least equal to the degree sought by the applicant shall be appointed. To a doctoral thesis, one or two opponents meeting the requirements for a supervisor of doctoral theses from outside the university shall be appointed.
21. The defence of master’s and doctoral theses shall take place at the meeting of the defence committee as a public academic discussion and it may occur only if attended by the applicant and at least one of the reviewers/opponents (in the case of a doctoral thesis, the opponent from outside the university).
22. A defence committee has a quorum if, including additional members, at least 5 (in the defence of a doctoral thesis) and 2 (in the defence of a master’s thesis) committee members with appropriate academic degrees, including a required number with doctoral degrees, are present.
23. The defence committee may revoke its decision, if data presented in the master’s or doctoral thesis are proven to be falsified or plagiarised. The relevant decision of the defence committee shall be made public.

VI. Requirements for Doctoral Thesis (University of Tartu, 2008)
16. A doctoral thesis is an independent study which presents an original argumentative solution to a specific scientific problem and the results of which have been sufficiently reflected in international professional literature. A thesis shall include:
16.1. Overview about the essence of the problem discussed;
16.2. Formulation of the goal of the problem;
16.3. Arguments set forth for defence;
16.4. Descriptions of methods;
16.5. Course of solving the problem discussed and its evidence;
16.6. Conclusion;
16.7. List of references;
16.8. Thorough Estonian summary on the content of different parts of the work if the thesis has been written in a foreign language, and thorough summary in a foreign language on the content of different parts of the work if the thesis has been written in Estonian.
17. A Doctoral thesis has been formed either:
17.1. Series of publications supplied with a summary survey, which shall be published in the series of University theses (Dissertationes ... Universitatis Tartuensis). In case of series of publications supplied with a summary survey, the prerequisite is the publication of three articles in the publications, specified in clauses 18.1-18.4. If the publication has several authors, the specific contribution of the applicant for the degree has to be indicated in its preparation.
17.2. A monograph, published in the series of University theses (Dissertationes ... Universitatis Tartuensis), which comply with the requirements specified in clause 16 and which has been pre-reviewed at international level by at least two independent reputable scientists in the respective speciality. In case of a monograph, published in the series of University theses (Dis-
sertationes ... Universitatis Tartuensis), the prerequisite is the publication of one article minimum in the publications, specified in clauses 18.1-18.4.

17.3. In clause 18.5 specified as a monograph. Provided the monograph does not include all the components specified in clause 16, the monograph has to be submitted for the defence with the annex, which includes all the essential parts required in clause 16, which shall be published in the series of University theses (Dissertationes ... Universitatis Tartuensis).

18. Following scientific publications with research content are considered to be subject to the publication of the research in the doctoral thesis:

18.1. Articles in journals, which are indexed by ISI Web of Science,
18.2. Articles in journals which belong to the category “A” or “B” of ERIH;
18.3. Articles in other international pre-reviewed leading scientific journals of the speciality, which has an international college, international distribution, indexed in several international databases and opened for contributions;
18.4. Articles or chapters in the publications of reputable international scientific publishing houses;
18.5. Monograph issued by internationally reputable scientific publishing house.

VIII. Procedure for Applying a Doctoral degree (University of Tartu, 2008)
27. An applicant for doctoral degree shall submit the following documents to the defence committee:

27.1. Application to apply for the degree, where the academic degree applied for has been specified;
27.2. Edited text of thesis;
27.3. Standard CV (curriculum vitae) with the list of research publications;
27.4. Written evaluation of supervisor(s) on the thesis (in case the work has a supervisor).

28. The defence committee shall send edited text of the thesis and standard CV (curriculum vitae) of the applicant for the degree with the list of research publications to an Academic Secretary who evaluates the formal correspondence of submitted materials to requirements, involving experts if necessary within three business days, since the receipt of documents specified in clause 27. The Academic Secretary shall submit its written opinion to the defence committee within five business days. In case the thesis has been submitted in the form, specified in clause 17.3, the Academic Secretary shall submit its opinion within three weeks.

29. The defence committee shall adopt one of the following resolutions within one month since the receipt of documents submitted by the applicant:

29.1. Permits the thesis for defence;
29.2. Shall not permit the thesis for defence;
29.3. Sends thesis for pre-review.

30. Upon receipt of pre-reviews the defence committee shall adopt one of the following resolutions:

30.1. Permits the thesis for defence;
30.2. In case of insufficiencies requires specification and correction, and after the corrections have been made, adopts a new resolution about the permission to the defence;
30.3. Shall not permit the thesis for defence.

31. In case the defence committee decides to permit the thesis for defence, at the same time the opponent (opponents) of the thesis, place and time of defence, and additional members of the
defence committee for the defence, if necessary, shall be appointed. The opponent of the work can also be pre-reviewer.

32. Internationally reputable scientist of relevant speciality can be appointed as a pre-reviewer and opponent of the thesis, who has a doctoral degree or an equivalent qualification, who does not work at the University of Tartu and upon completion this duty the conflict of interests shall not occur. At least one opponent of doctoral thesis has to be outside Estonia, in case the Rector does not decide otherwise upon the proposal of the defence committee.

33. After adopting a resolution on the permission to the defence, the defence committee shall submit a standard decision on permission of the thesis to the defence to the Department of Academic Affairs.

34. After the permission to the defence the applicant for the degree shall submit a published and electronic thesis to the defence committee.

35. The thesis has to be available to be accessed at the University Library in paper, and electronically at the website of the University Library at least one month before the defence, except the case the defence of the thesis has been announced to be closed. Information on defence shall be published in the newspaper of University and on the web address of the University.

36. Doctoral theses shall be preserved at the University Library.

IX. Defence of thesis

37. Defence of thesis takes place at the meeting of the defence committee as a public academic discussion. The defence of a thesis including state secret, business secret or any other confidential information may be announced as a closed session upon proposal of the defence committee by the Rector. The defence may only occur if the applicant and at least one of the opponents and relevant composition of the defence committee with additional members responding to the requirements of clause 6 attend.

38. The main stages for the defence procedure are following:

38.1. Presentation by the applicant (lectio praecursoria);

38.2. Academic discussion between the applicant and the opponents;

38.3. Discussion by the participation of defence committee members and members of the audience;

38.4. Adoption and announcement of a resolution.

39. The defence committee decides in a closed session on awarding the academic degree applied by the author of thesis. In its decision the council proceeds from the correspondence of the content of the thesis to the requirements, and the ability of the applicant to defend the arguments of the thesis in academic discussion. The resolution shall be adopted on the basis of clause 10. The Council may provide an evaluation to the thesis and its defence on the scale of following evaluations: summa cum laude (“with highest praise”), cum laude (“with praise”), optime approbatur (“meeting requirements in optimal way”) and approbatur (“meeting requirements”).

40. The written resolution adopted by the defence committee is submitted to the Department of Academic Affairs of the University and it serves as a basis to issue the relevant diploma.

X. Contestation of a Resolution Adopted by the defence committee
41. Upon the breach of regulations concerning the defence of theses provided in the current statutes and other legislation, an appeal on the defence committee’s resolution may be submitted to the dispute committee formed on the basis of Study Regulations within one week since the day following the announcement of the defence committee’s resolution. Dispute committee shall decide within 30 days since the submission of the appeal whether the disputed resolution shall remain in force or annuls it, and sends the resolution to re-review by the body, which adopted the resolution. Dispute committee conducts proceeding pursuant to the procedure prescribed by Study Regulations. The resolution of the dispute committee shall not be appealed at university.

42. The defence committee may revoke its resolution, if data presented in the thesis are proven to be falsified or plagiarised. The relevant application shall be submitted to the dispute committee formed on the basis of Study Regulations, which submits its opinion to the chairman of the defence committee, which awarded the degree. Subsequent to such revocation the applicant permanently forfeits the right to seek a degree at the University of Tartu. The relevant decision of the defence committee is made public in the newspaper of the University and at the website of the University.

XI. Implementing Provisions
43. This regulation takes effect 1 January 2008.

Appendix 3
PhD studies reviewed in determining the range of standards for Estonian PhD thesis in the Field of Education

University of Tartu

Tallinn University

e. **Katrin Poom** (2007) Novice teachers’ professional development across their induction year (only summary obtained)

f. **Kristina Nugin** (2007) Investigation of children aged 3 to 6 intellectual development under different growth environments using WPPSI-R tests,

g. **Mari Karm** (2007) Estonian adult educators development of professionalism opportunities


