10th Semester

Human Centered Informatics

Autonomy Learning and Continuous Use of e-learning in a Southern University Context

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Table of content:

Introduction:

This thesis is written as a follow-up to an internship held within Aalborg University where the author was working on the MAGAART case. After end internship a report was written evaluating the work done within the affiliated Southern universities showcasing both what went well and what problems arose under the initiative. It is in this evaluation this project is manifested. The information provided through the report displayed several issues in regards to making the Southern partners commit to ICT solutions and in making the users continue to use it. As the support of ICT in the form of online tools was among the important aspects of the MAGAART initiative I found it interesting to investigate how this could be avoided in any future case. In this case I will be looking into what kind of strategies can be used within learning to ensure users continue to use ICT tools. In this regards autonomy learning came to mind as it could prove as an interesting concept in relation to the MAGAART problems.

Problem statement:

I want to undertake an investigation on how autonomy learning strategies can help users in sustaining use of e-learning long-term within the MAGAART project.

What is MAGAART?

Before anything else it is a necessity to understand the background for the project. MAGAART is an acronym that covers six universities: Maseno University, Aarhus University, Gulu University, Aalborg University, Roskilde University and Tribhuvan University. Three of these universities are thus stationed in Denmark, Maseno University in Kenya, Gulu University in Uganda and Tribhuvan University in Nepal. The project is independant and will be running from 2014 - 2016.

The thoughts behind the MAGAART project were to develop and conduct courses for PhD students and Supervisors at the foreign universities. These courses, done through workshops, would be done through e-Learning and with problem-based learning. The combination of these two factors would create the workshops that would be gone and done. The overall objective of the project would be to strengthen the foreign universities in knowledge sharing, research dissemination and communication. Also of importance were to increase their capacity in e-learning and problem-based learning (MAGAART, 2016). Onward is a short explanation of the different workshops, and the result of their evaluations.

Orientation workshop:
The orientation workshop were the first one conducted, in 2014. The workshop introduced different technologies working with open collaboration, such as sharing of links etc. The workshop was divided into three stages:

- Pre-orientation workshop stage
- Face-to-face stage
- Post-orientation stage

The pre and post stages were to happen online. The activities were done in a virtual learning environment (in this case Moodle).

29 professors were introduced into how problem-based learning could be used in PhD education, and in which ICT tools could be used for supervision practice, such as communication, sharing and collaboration. In evaluating the workshop, a survey was conducted with 14 respondents. Overall the respondents found the workshop appropriate and relevant (Report of the Orientation Workshop MAGAART Project, 2014).

Conflict management workshop:

This workshop lasted two days and dealt with conflict reaction patterns, conflict analysis and conflict management. The participants had to share some of their own experiences with conflicts during the workshop. The participants received an e-learning task before and after the workshop. Before the workshop they had to describe a personal experience with conflicts, and afterwards they had to answer three reflective questions (Workshop on Practical Conflict Management, 2015).

Data analysis workshop:

The aim of this workshop were to help PhD students from the three foreign universities develop analytical strategies, theoretical and methodological frameworks to support their project writing or research. These workshops was also a mixture of online learning and being there physically. Before and inbetween the workshops the participants had to write papers and assignments which would be discussed in the workshops. Throughout the workshop participants learned how to work with their data, using *Doing Qualitative Research* by David Silverman as the prescribed textbook (CFA-MAGAART, 2015).

Capacity building workshop:

This specific workshop dealt with teaching the partners at the foreign universities about e-learning techniques and problem-based learning. In the workshop they explored the usage of *LMS* (learning management systems) within learning and teaching. The participants were oriented about the usage of e-learning and online learning environments combined with theories and design for online learning with focus on content development. The main idea of the workshop were for the participants to reflect upon how e-learning can apply to the needs of the universities (Report of the Orientation Workshop MAGAART Project, 2014).

My work with the MAGAART project:

Within this chapter I want to discuss what I have been doing prior to my Master working with the MAGAART project. The reason for this chapter is that I, during my internship, worked on the case for the majority of the time. Thus this Master project is, in a sense, a follow-up to the internship. This means that there is a necessity to use data, information, literature etc. that I have been working with prior. In this chapter I seek to disclosure what I have been working on before to give the reader an idea of what is entirely new, and what has been gone over before. It is important to understand that the majority of the data within this project comes from my time in the internship.

The first task I was given was to create an interview guide that would be used to evaluate the workshops. The idea behind the interview guide (and the interviews in general) were to gain information from the participants of the workshops regarding what they thought worked and what did not. Behind the questions were the TPACK theory. The use of this theory were to pinpoint what kind of learning the respondent gained from the workshops. This pinpointing helped the evaluation in the sense that it showed what weaknesses that might have been, and what needed to be bettered were it ever to happen again. The entire interview guide (and a short description of the TPACK model) can be seen at appendix 1.

Besides the interview guide I also worked on transcribing some of the interviews that came in afterwards. With some of the interviews transcribed I also helped on extracting information from them. This was done through grounded theory where I worked on creating some codes, and pinpointing the codes within a couple of interviews. This was the last thing I managed to work on during my internship, but the general idea was continued after my departure.

What I want to continue using for this project:
For this project a lot of the earlier information will be recycled. The information gained from the grounded theory used on the interviews (and the interviews in general) are priceless and will serve as the base of the project. (might need to put in more concrete what Ill be using).

Methodology section:

On the project:

Within this section I wish to discuss two things. The first is how this paper was written, the second is how my literature review was conducted. The reader will realize that I do not reference to any methodological theories, which I will start out explaining why this is the case. First and foremost one of the reasons for this is that I am not collecting my own data but instead I am working with pre-made data. This data consists of the MAGAART report (it's results) and the data behind the report. This data involves interviews as raw data, and interviews through grounded theory. The amount of data is very large so a lack of data is not an issue. The data will not be shared within this thesis (nor anywhere else) due to the fact that it is confidential. For a reference the reader is directed to the MAGAART evaluation report.

As I am working with strategies that will not be tested out in real life (at least not during this thesis) this paper will be one of a conceptual nature. The end result will be a concept that in theory can be used in a real-life setting. Had I instead taken the project in another direction and gathered my own data, perhaps completely from scratch, this chapter would have been a more conventional methodology section describing my procedures etc. Instead this project is is constructed somewhat in the same faction as a literature review. In the following I wish to narrate the procedure of writing the thesis.

As has been said before the project started out in the aftermath of my internship working with the project. In the beginning of the project I initially wanted to make modifications to the workshops trying to fix the problems that were occurring during the prior workshops. Reflecting upon the work to be done it did not seem like a topic strong enough for a thesis and instead I came to think of autonomy learning which I had also been working with prior. It was thus the idea for the project was born, seeing a connection between how autonomous learning strategies might be able to give an answer to the problems. Having worked prior on the project I found it necessary to talk about what work I did in the internship, if disclosure was needed, together with an explanation of what MAGAART is.

With these information clear the literature review was conducted. The review is thorough and lengthy which I found necessary due to the fact that this thesis is conceptual, and has a lack of (new) empirical data. I chose articles and books which spoke of different strategies, theories etc. in order to create somewhat of a knowledge base of autonomy learning strategies. Each article and

book chosen was shortly described bringing forth the main points and findings. It is also these same articles and books which I have used to categorize different strategies in the more theory-driven part of the thesis. The categories within this section were not predefined categories, but rather categorized by the author. This categorization is done to get an overview of which strategies actually exists within the autonomy learning paradigm (according the the chosen articles and books), and in order to structurize a legitimate, theory-backed end-strategy as a conclusion for the thesis.

The next part of the project involves a closer look at the MAGAART evaluation report, and hetch showcasing the problems that was identified. The problems pointed out in this section is in mostly in regards to ICT use, although some other identified problems are mentioned as they will affect the outcome of a strategy. Besides the report results I have also pointed out some issues that I have found myself by looking through the MAGAART data (interviews and grounded theory data). With these factors identified I took a closer look at the route from novice to expert as this seemed to be one of the overall problems. In this regards Dreyfus and Dreyfus were used. Following were a closer look at MAGAART's economy in order to gain an understanding of what the price range would be, for a tangible strategy. The end project (the strategies) were split up into two categories: an ideal strategy and a tangible strategy. The ideal strategy were created to showcase how e-learning can be sustained long-term in a Southern university without thinking economics. The strategy is built upon the theory and information prior in the project and takes especially standpoint in the pointed out autonomous learning strategies that has been identified. In the end is the tangible strategy which takes starting point in the ideal strategy. It is structured in a way which economy is the leading factor. At the end of the tangible strategy is an estimate of how much it would cost to do in a real-life setting.

Structure of the Literature Review:

The very first thing I seek to discuss, is what kind of literature review I have constructed. The overall subject of the literature review will be focused on *Autonomy Learning.* Before discussing the chosen literature, my problem statement etc. I want to discuss the different characteristics from Cooper's Taxonomy of Literature Review. The model consists of six characteristics: focus, goal, perspective, coverage, organization, and audience (Randolph, 2009). These characteristics will be presented and shortly explained in the named order.

Focus:

Within the focus characteristic, four different foci exists. Of those I will be undertaking a review focused on the *research outcome* due to the fact that I believe the outcome of prior research would be of more importance to me than the research methods, theories, practices or applications (Randolph, 2009). The reason behind this is that this thesis is not focusing on what kind of methods, theories etc. has been state-of-the-art, but rather to understand what the outcome of their research became. When dealing with strategies, I believe that the outcome is more important than the methods using to get there. Therefore the focus is on the outcome and in trying to develop a research rationale. By having this specific focus I will also be able to investigate if there is a lack of information on the subject of my thesis, thus helping to justify my investigation.

Goal:

A literature review need goals. As written in the Focus paragraph I want to understand if there are enough literature or perhaps even a lack of information on my subject. Therefore a goal of the literature review is to search for any weaknesses within the literature (Randolph. 2009). It was not a direct goal within the MAGAART project to foster continuous usage, but perhaps more, in a sense, taken for granted and expected of the participants. Because of this I want to investigate and analyze the existing literature to understand if this subject is lacking information.

Perspective:

Within this characteristic I want to discuss what kind of literature review I will be undertaking. What this means is if the review will be either qualitative or quantitative. Both seem to be a viable option with each of their positive and negative aspects. As for a quantitative literature review, the preferred style is *meta-analytic*. The meta-analytically literature review is statistical, attempts to take a neutral perspective, finds common metrics and examines how a study's characteristics covary with the study's outcome (Randolph, 2009). The statistical outcome of a quantitative literature review could provide a good ground in the case of justifying if there is a lack of information on the subject of autonomy learning within the context of my thesis or not. It would be showed in hard facts, but also seem static. It does not necessarily discuss contrary findings, discuss relationships between the different themes and does not necessarily have a narrative tone.

As for a qualitative literature review one of the bigger pitfalls is the writer's preexisting biases. These biases can be outlined within the literature review in order to explain how it might have

affected the review. Randolph (Randolph, 2009) outlines two different ways of conducting a qualitative literature review. The first being based on phenomenology, following the same ground principle as phenomenology in research. The idea is to arrive at the essence of the lived experience of a phenomenon, although it is the research report that is being analyzed rather than how an individual would experience the phenomenon (Randolph, 2009).

The second way of conducting a qualitative literature review is through Ogawa and Malen's method. They have constructed eight steps to follow, which mirrors the way you would conduct qualitative research (Randolph, 2009). These steps are almost mirrored in Cooper's (Cooper, 1984) guide to writing a literature review. These steps, as explained above, also mirrors how research is being done. There is a coherence between Cooper's explanation of conducting a literature review, and Ogawa and Malen's qualitative structure. The strengths of conducting a qualitative literature review seem to be that it is more vocal and explanatory in the way it is conducted. It might be more biased and 'personal', but it is more descriptive in its approach, seeking information from different angles (such as contrary or rival findings).

Having looked at both qualitative and quantitative ways of conducting a literature review I now want to discuss which review will be conducted. Backtracking to my focus, I wanted to look closer at the research outcome. I seek to develop a research rationale to see if I can identify a lack of information regarding my study. With this outcome I seek to gain a deeper understanding of the material, and from there see how it will lead my investigation. The focus is not on the theory or methods used within the text, but rather the texts as a whole. Therefore I believe that a quantitative representation of the literature will be inadequate and too static. It simply does not help gaining a deeper understanding of the information. Also I have a premonition regarding the literature I am going to read; that most of it, if not all, will be done through a qualitative research perspective. This fact, combined with the fact that my own empirical data stems from interviews, also helps outline the point that a qualitative literature review is the most suiting for my work.

With this established, there is only left to choose between Ogawa and Malen's method or the phenomenology method of writing a literature review. Both of the methods are valid, although Ogawa and Malen's model has a higher focus on documenting how the literature review is conducted. For example they demand, that a researcher document every step taken within the search of literature. The fact that it mirrors both Cooper's (Cooper, 1984) outline of a good literature review, and a general model for writing a project, I find this model more useful than the phenomenology model. Thus, this literature review will be qualitative and written through the

method described by Ogawa and Malen (Randolph, 2009). Although Randolph do believe that a Code Book is necessary in order to extract data from the chosen literature there will be a quantitative aspect to the review. This will be done in form of a graph counting what themes are most represented in the review.

Coverage:

Within this characteristic I want to explain how much literature I want to include within my review, and which strategy I have chosen. There are different ways of doing this, although I choose to make a *representative sample* (Randolph, 2009). What this means, is that I will create a sample of literature that will represent the whole population of information on the subject. This is no easy task, and will need evidence of why the chosen literature is representative. The reason why I choose to make a representative sample is, that it is too time consuming making an *exhaustive review* (Randolph, 2009), an *exhaustive review with selective citation* (Randolph, 2009) would not consider all kinds of literature (conference notes, news articles etc.) but only one kind, and lastly a *purposive sample* (Randolph, 2009) would only consider very central literature. I will thus cover the literature by making a representative sample, that will speak for for the entire subject.

Organization:

A literature review can be organized in different ways, either historically, conceptually or methodologically (Randolph, 2009). Within this literature review I want to organize it conceptually, due to the reason that the history of how autonomy learning has come to what it is today is irrelevant in regards to my problem statement. As explained all through the review thus far my focus is not on methodology either. Therefore it makes the most sense to organize the review according to the concepts of the chosen literature.

Audience:

As for the audience, I want to highlight the following quote:

For a dissertation, the supervisor and reviewers of the dissertation are the primary audience. Avoid writing the dissertation literature review for a general, non-academic audience (Randolph, 2009, p. 4).

I have now considered the structure for my literature review, and are now ready to begin conducting it. As I have chosen to write a qualitative literature review I will thus briefly explain how I

might be biased regarding making the review as a whole. After this explanation I will follow Randolph's (Randolph, 2009) guide on how to create a literature review.

Potential biases:

As I have been working with autonomy learning before (and the project from which I am focusing on in this thesis) I am bound to have certain biases. In this subchapter I seek to underlie these biases. During my internship I had a sidejob where I had to seek for literature regarding autonomy learning, essentially creating a literature review about the subject. It was in no way as comprehensive as the one within my thesis, but it still leaves me biased as I already have somewhat of a knowledge of what exists on the subject. I have also been reading different articles and books on the subject before the master which also leaves me with an impression of what exists. This might be the most important bias that might affect the work I am creating. In order to try to be as little biased as possible I will not use the prior literature review in any way, and start from scratch.

Problem statement:

It is now time to create a problem statement for the literature review. Here it is important to reflect upon if I only want to use primary literature, or a mixture of primary and secondary literature (Randolph, 2009). It is also important that the question helps limiting my search (De Montfort University Leicester, n.d.). Since my problem statement for this thesis has to do with somewhat of a subgenre of autonomy learning (being autonomy learning strategies) I believe that secondary literature is a necessity. Although to also gain a larger understanding of what information has been published on the subject itself I also find it necessary to investigate autonomy learning by itself. Therefore my problem statement will be as follows:

What is the outcome of the research done within autonomy learning strategies?

As far as the problem statement goes, I also want to discuss some inclusion/exclusion criterias (Randolph, 2009). The age of the papers is irrelevant because they might hold valuable information regardless. I have also chosen to focus on searching for other autonomy learning strategies instead of just reading about autonomy learning. The reason behind this is that I do not seek to gain information on autonomy learning as a learning theory/philosophical theory but rather to understand how strategies within learning has been used in praxis beforehand. Lastly I will try to find as much literature as possible within different learning disciplines.

Literature review:

Data collection:

Within this subchapter I want to present the information I have found together with the method I executed in order to find it. I wish to begin with the latter. Bringing attention back to the problem formulation (either the one for the entire project or the one for this literature review) it is clear that the main focus is on *autonomy learning strategies*. Therefore this will serve as the main keyword for my literature searching. In the following I want to show the trail I followed in order to find the information for this review.

The very first thing I chose to do was to search for books at Aalborg Hovedbibliotek at February 24th 2016. I went into their search engine and typed in “autonomy learning strategies” which yielded zero results. Figuring it might be hidden under the main literature, autonomy learning, I searched for this instead. This yielded nine results. Seeming to be getting nowhere I shifted to Bibliotek.dk to search through every library in the country. Here a search on “autonomy learning strategies” yielded 77 hits. Both books and e-books. A glance at all the pages quickly landed the impression that almost every single book was focusing on language learning. I found a book titled Learner Autonomy by Ágota Scharle and Anita Szabó (2000) which proclaimed to have focus on developing learner strategies.

Learner Autonomy by Ágota Scharle and Anita Szabó (2000)

The book begins with a short summary of what the authors agree upon is the correct explanation of what autonomy learning is. Following through the rest of the book is different strategies teachers can use within their classrooms to foster autonomy learning, focused specifically on language learning. These strategies are heavily tied into language learning and seem unlikely to be used in any other context. The book has no conclusion and thus serves more as a guidebook for teachers than an actually autonomy learning strategy book.

Seeing as the library could not provide a larger insight into autonomy learning strategies (except a somewhat broad array of books on language learning) the next plan of action was to use my own university’s database; Primo. When using Primo, and searching for autonomy learning strategies, it yields 1.178 results (as of March 17th 2016). This includes books, peer-reviewed articles, conference papers, newspaper articles etc. As I would not have time to go through every single written text, I needed to look at my inclusion/exclusion criteria, in order to filter unwanted

information aside. At first sight there appeared to be the same pattern as when I was searching through the library database; an overflow of language learning articles. I therefore chose to search for information outside of this field in hopes of getting information spread across multiple fields. Therefore I made a major exclusion criteria of trying to filter out language learning papers. Besides that it was important to find papers actually written about learning and learning praxises with focus on autonomy. Below is a list of the eight articles I picked out. They were picked by looking at the name of the text and the short description that followed:

Autonomy Support for Online Students by Eunbae Lee, Joseph A. Pate and Deanne Cozart (2015)

The main focus of this article is why the droprate of online students is as big as it is. The authors express concern that the online tools used for learning leaves the students with far too little control. Students who were given a rationale for what they were studying, and where the teachers respected individual interests, were seen as more autonomous. When the students were invested and interested in the project they wanted to complete the task. Thus the authors concluded that providing choice, rationale and opportunity for personalization would help support student autonomy.

Exploring a New Role for Teachers: Promoting Learner Autonomy by Nae-Dong Yang (1998)

Even though the title did not express it, this article regards language learning. Looking aside it gave some valuable points in regards to promoting learner autonomy. Nae-Dong's findings showed that teachers should consider the learners maturity level and their interests when designing learning strategies. Also the usage of monitoring own learning was used, in this case through diaries so the students could see their own evolvement. Concluding, the article found that the teacher's role were very important in order for students autonomy to become a reality.

Exploring Factors that Influence Adoption of E-learning within Higher Education by Emma King and Russell Boyatt (2014)

Although the title does not indicate an article purely about autonomy learning it is one of the themes. The authors seek to investigate what holds students back from adopting e-learning in their education. They make the point that it is of high importance that students leave higher education with technological skills as they will be using them in a future workplace. Students may be tentative and lack confidence and the staff might lack the knowledge of using technology. In order to create

a technologically advanced space for the students there is a need for organizational clearness and institutional strategies that makes autonomy stretch through the faculties and departments. These are some of the important aspects the article concludes upon.

Exploring Motivational Strategies of Successful Teachers by Sri Puji Astuti (2016)

This article is from Teflin Journal which has focus on teaching and learning english. The context is an indonesian high school's english class. In the author's work the process-oriented model developed by Ushioda and Dornyei (2012). This model describes how autonomy learning can happen in students. What Astuti found was that teachers are among the most important aspects for student's autonomy to develop. Also the teacher lead the students choose their own discussions, making them a part of the process. Astuti also found that you could motivate students by introducing the instrumental value of what they were learning (in this case the language they were studying). The effects of the strategies might although depend on the level of the student and even their culture. The result of the analysis showed that motivation in studying a second language is related to disciplines outside of language learning, and that some strategies are transferrable, although some of them would be culturally bound.

Flexible Learning Activities Fostering Autonomy in Teaching Training by Rita Kupetz and Birgit Ziegenmeyer (2006)

Another deceiving article name, as this also is regarding language learning. The authors look at using autonomy as a course strategy which involves the entire curriculum, materials, tasks and learning arrangements. They find that dialogue with the teacher is very important. In their words, an autonomous learner must set his own goals, plan, monitor, and evaluate own learning. The practice of learner autonomy is thus to expand learners capacity for detachment, critical reflection, decision making and independent action. In the classroom they used learner diaries as a strategy for the students to reflect on their learning. Also they express that there is a need for independent learners in society who can learn without the need of a teacher. Closing, the authors point out that technology has great potential for developing lifelong learning strategies.

Fostering Learning Autonomy through the use of Learning Strategies by Claire E. Weinstein (1987)

In this article Weinstein firstly lists examples of learning strategies, going from summarizing, paraphrasing, imaging, creating analogies, notetaking to outlining. Of these strategies students will

often not try any alternative learning strategy if the first one they use fail. Weinstein then continues to categorize the learning strategies into the following: rehearsal, elaboration, organization, comprehension monitoring, and affective. When teaching students learning strategies, she argues that an algorithmic way of teaching it would be less effective. Instead of learning the students a lot of different strategies (the algorithmic way) Weinstein argues that a heuristic approach would be a better choice, done through reflection of the method learned, practicing it, receiving corrective feedback and test the limits of transfer. Concluding, Weinstein believes that it is important to teach students a set of guidelines to help them maximize their search for a problem's solution, and that the most important aspect of this teaching is feedback.

Strategy-based Instruction: A Learner-focused Approach to Developing Learner Autonomy by Le Thi Cam Nguyen and Yongqi Gu (2013)

This study investigates the effect of strategy-based instruction in teaching students how to be autonomous learners. The paper makes the point that through the last three decades there has been a growing interest in learner autonomy within language learning. Nguyen and Gu highlight Benson's (2001) six approaches to developing learner autonomy: resource-based, technology-based, curriculum-based, teacher-based, classroom-based, and learner-based. Within these approaches, Nguyen and Gu lists the most popular ways of executing it, ranging from cooperative learning, portfolios, self-assessment, peer-assessment to and out-of-class learning. The point is also made, that most learner autonomy studies so far have been mostly descriptive and exploratory and that the most promising research on the area shows that learner-based approaches and strategy training works the best at promoting learner autonomy. In their research, Nguyen and Gu found that monitoring was the least used component used for self-regulation, even after the students have been trained. They did although have enhanced abilities to plan, monitor and evaluate writing tasks. The paper concludes that strategy training should be much more integrated into the curriculum.

The Strategic Development of Learner Autonomy through Enquiry-Based Learning by Mike D. Bramhall, Justin Lewis, Allan Norcliffe, Keith Radley and Jeff Waldock (2010)

The authors of this paper used enquiry-based learning in designing higher education programmes in order to enhance students learner autonomy skills. They characterized an autonomous learner as a person who can reflect critically, are self aware, takes responsibility for their own learning and works creatively in complex situations. The research is based on constructivism and the premises that knowledge is constructed by each learner done through social interaction with each other.

According to Bramhall et. al. the recent research within the subject agrees upon that autonomy is seen as a developmental process which cannot be neither taught nor learned although they see it as possible to achieve 'pedagogic resonance' for the students and create a space for new learning partnerships.

These were the articles that were found through Aalborg University's own platform Primo. Before moving on I want to explain why it was these articles which were chosen among the 1.178. Whenever I was looking through the articles one thing became clear from the beginning. As was being said by Nguyen and Gu (2013) a vast amount of interest within autonomy learning stems from the language learning discipline. If I had to give my own estimate I would value around 85 %, if not more, to be articles regarding language learning. Thus did my strategy of finding literature not related to this subject fail. There is simply not enough literature about autonomy learning strategies that is not interconnected with language learning. Therefore I will have to reevaluate my searching strategy together with discuss if strategies within language learning actually can be used outside its own paradigm and vacuum.

Through the texts I have presented so far, one author believes that this is possible. Astuti (2016) found that the motivation needed for studying a second language is related to disciplines outside of language learning, and even that some of the strategies are transferrable. That being said, this was the only text I have found that addressed this issue. I believe that Astuti (2016) makes a valid point and will heavily stress upon the fact that only *some* of the strategies are transferrable. By returning to the book Learner Autonomy by Ágota Scharle and Anita Szabó (2000) it is clear that strategies tailored specifically to language learning activities might be hard (and most likely impossible) to transfer to other disciplines. Therefore it is important to be vigilant regarding which strategies is "borrowed" from the language learning tradition. I want to stress, that due to the fact that almost the entire literature on autonomy learning strategies involves language learning, it is important to incorporate this literature into my study and research.

Before continuing my search I want to discuss why these articles were picked out. When I did the search I went through page 1-10, which in articles is 100. I have thus picked out 8 % of the articles I was looking through (and less that .8 % of all articles within Primo on the subject). The reason for not looking further than page 10 was clear to me due to the fact that almost every single article past page 10 had nothing to do with autonomy learning at all. The search engine picked up the word "learning" and matched articles with it, having no relation to autonomy learning. Therefore a large amount of the articles became highly irrelevant, and thus I decided to not look any further.

The eight articles I chose were, as explained before, picked on their name and memo by trying to exclude language learning. This, as the reader can see in the descriptions, was not possible. What I ended up with was a mixed array of articles, some regarding language learning and some with no focus on it, thus creating a mix of different literature on the subject.

Moving forward I chose to use another search engine to get a larger base of information. For the purpose I chose ERIC (ERIC, 2016) and used the same search term as earlier, Autonomy Learning Strategies. In order to narrow my search even further I chose to only see peer-reviewed articles and only texts that were fully available on ERIC. In total there were 66 results spread out on five pages. Due to the slim array of articles I thus went through all the available pages. I used the same strategy as on Primo, mostly choosing articles that did not directly have anything regarding language learning within the name of the paper or in the description, knowing that it will be unavoidable to find non-language learning articles. In total seven articles were chosen, giving a sample of more than 10 % of the entire literature on ERIC regarding the subject. Below will be a description of each paper:

A Study of Autonomy English Learning on the Internet by Yunsheng Zhong (2008)

This article breaks the rule of not deliberately including language learning articles within the search, although the fact that it focuses on the Internet it grabbed my attention. Zhong (2008) explains that self-monitoring is very important when working with learning and the Internet. In order to foster self-monitoring learners should establish a good learning goal, formulate feasible study plans, optimize the self-evaluation for their learning process, their confidence and effects. It was found that teachers were the most important aspect in strengthening students autonomy and in helping developing them into independent learners. All in all the paper is more of a step-by-step guide to how learners were using tools on the internet in order to learn english.

Activity Based Learning as Self-Accessing Strategy to Promote Learners' Autonomy by R. Ravi and P. Xavier (2007)

This article examines how learner autonomy is created through activity-based learning as a self-accesing strategy. It was found that interactivity amongst the students were the key to successful learning; and also the base of activity-based learning. Ravi and Xavier found that learners should have freedom in regards to subject, methods, when to study etc. and that it was of high importance that the students identified their difficulties and fulfilled their needs in order to overcome it.

Concluding, they found that learners must take on the responsibility to learn independently from the teacher.

Facilitating Autonomy and Creativity in Second Language Learning through Cyber-tasks, Hyperlinks and Net-surfing by T. K. Akinwamide (2012)

This article, despite the fact that it has language learning in the name, had some strikingly similarities to the project I am undergoing. The paper focus on autonomy in second language learning through digitalization. Akinwamide reason that technology can be used as a powerful tool in expanding learners understanding of the world and their place in it. Furthermore, he argues that creativity is very important because it improves self-esteem and motivation and equips the students for academical and professional tasks. Akinwamide found that students who had been tasked and drilled effectively in how to use modern technology would be likely to continue using it in the future and that computer-asserted learning can help develop autonomous learning. He also argue, that computers have become a highly important element that is of great importance for scholars. In the last half of the paper Akinwamide discusses digital divides with focus on Africa. He argue that the access to technologies in Africa still is quite low compared the the developed world and that they do not have access to the latest technology. It is, as Akinwamide puts it, disheartening that a large amount of people do not know the benefits of using academic web interactions.

Learner Autonomy, Self Regulation and Metacognition by Feryal Cubukcu (2009)

In this article Cubukcu explores the metacognitive theory behind learner autonomy and self regulation. Self regulated learning is, according to Cubukcu, a student's control over their own thinking, affect and behaviour. She focuses on the problem of underachievers, arguing that the problem could be found in failure to integrate self regulation and affect. Underachievers are skill deficit, have a personality dysfunction (afraid of failure, in need of constant approval etc) and are inefficient in self-control. Cubukcu found, that low autonomy is closely related to low self regulation habits.

Self-Regulation in the Learning Process - Actions through Self-Assessment Activities with Brazilian Students by Giovana Chimentão Punhagui and Nadia Aparecida de Souza (2013)

This article dealt with language learning in a high school. The authors point out that in order to develop autonomy and to become more independent it is important to be motivated and execute

self-regulation processes. In order to motivate students ability of reflection, Punhagui and de Souza argues that self-assessment could be used. They continue to show Zimmerman's (2002) cyclical model for self-regulatory interventions, which should enhance the potential to develop autonomy. The model has three phases: the forethought phase, the performance phase and the self-reflection phase. If a student has problems in learning, and not knowing how to study, Punhagui and de Souza argue that failure and passiveness will happen. In order to avoid this they see the role of the teacher, and intervention from the teacher, as key component to help the students overcome their weaknesses.

Students Motivation and Learning and Teachers Motivational Strategies in English Classroms in Thailand by Jutarat Vibulphol (2016)

This article is also regarding language learning. Vibulphol explains that motivation is very important, and that without it there may be no learning at all, and that teachers have an important role in either enhancing or undermining motivation within the students. Vibulphol further argues that 'amotivation' is a problem because it creates learners who do not want to engage in learning, and if they do, quit it after little effort. If the teachers support autonomy it could help students develop autonomy for lifelong learning. The relationship between the teacher and the students can be important for motivation; a safe environment where the students can take charge in tasks they themselves find important or interesting, together with a good relationship with a teacher, were found to be one of the strongest strategies. Concluding Vibulphol found that autonomy-supported strategies showed good potential in making students more motivated and to create sustainable learning, although motivational strategies is culturally based.

The relationship between Flexible and Self-Regulated Learning in Open and Distance Universities by Per Bernard Bergamin, Egon Werlen, Eva Siegenthaler and Simon Ziska (2012)

In this article the authors define autonomy as a condition for self-regulated learning. The authors believe that students should be active and constructive learners instead of being passive bystanders whilst learning happens. The aim of the article were to investigate flexible learning in open and distance learning and observing the connection between it and learning strategies in relation to self-regulation. Self-monitoring as a strategy was found to be helpful for students when improving learning, motivation and self-regulation. Concluding Bergamin et al. found that flexibility of the learning settings was important for self-regulation.

Ending off the summary of my collected literature I want to discuss a book which I originally found mentioned in another text; Flexible learning activities fostering autonomy in teaching training by Rita Kupetz and Birgit Ziegenmeyer. The book in question is called *Developing Student Autonomy in Learning* by David Boud. In their text Kupetz and Ziegenmeyer explains that:

Regarding learner autonomy we are confronted with the two roles of the target groups: the prospective foreign language teacher at school and the student teacher in teacher education. Developing Student Autonomy in Learning (Boud, 1988) is a significant book as it situates this approach in a wider context. It shows that the concept of autonomy is not new (Kupetz and Ziegenmeyer, 2006, p. 65).

Therefore I want to give a brief summary of the important points coming out of some of the chapters of this book.

Developing Student Autonomy in Learning by David Boud (1988)

In order to be an effective learner in higher education you need some attributes of autonomy learning. The most important part of autonomy is that the students themselves takes a large proportion of responsibility for their own learning instead of just following instructions. The book argues that the prior experiences a learner have with learning will be a factor of how well they actually do autonomous learning. The book also presents a paradox that teachers have to teach learners to be autonomous. As for learning forms that fits together with autonomy learning *problem-based learning* (PBL) is mentioned, and autonomy learning has gained increasing attention within the PBL paradigm. It is sought after that students become independent learners who work together in a social context. Also PBL is meaning oriented, and meaning orientation is linked to academic progress if the necessary freedom is given. In an experiment researchers found that the PBL approach worked better than traditional learning approaches in relation to meaning orientation. Another point made was that the relationship between the teacher and the learner is very important. Also the learners need to be conscious of the learning processes they are utilizing. Finally the notion of developing skills in problem solving prepares the learners for being lifelong autonomous learners.

This was thus the last part of information from the data collection. Before moving on I wish to discuss why I only chose to use one search term; autonomy learning strategies. Since I knew that searching for autonomy learning as a whole would produce a heavy amount of data I thought this would not do. I also did not search for terms that are synonymous with autonomy because the

exact information I was looking for was regarding the strategies used within autonomy learning. Moving on I now want to evaluate the data I have found. This will be done through a coding book, which will be available by its own (See Coding book).

Data evaluation:

As mentioned above a big part of my evaluation is done through my code book. I will shortly explain how the code book was produced and how I want to use it. I took the advice of Randolph (2009) and created a separate document with the data I have extracted. In his own words a coding book is:

[...]an electronic document, such as a spreadsheet, or a physical form on which data are recorded for each article.The coding book documents the types of data that will be extracted from each article, the process used to do so, and the actual data. (Randolph, 2009, p. 7).

When making the code book I took inspiration in *grounded theory*. I thus made up my own codes from central themes I remembered throughout reading the literature I have chosen. The codes were as follows:

#C = Culture
#L = Limits
#M = Motivation
#RL = Responsibility by learners
#RT = Responsibility by teachers/staff
#I = Involvement
#LS = Learning Strategies
#P = Problems
#OL = Online Learning
#LN = Learner's needs

After identifying the codes (which was an iterative process due to finding more themes when reading through) I picked out mentionable quotes from each of the articles I have used within this review, and applied the codes to the quotes. To see this, please refer to the Code Book. To see which codes were most representative, please see appendix 2. As is showed in the graph Learning Strategies is very prominent and outnumbers every other code. It should be noted that within the term Learning Strategies lies everything from simple tips regarding how to foster autonomy to

actual strategies made by researchers and thus is not 68 different learning strategies. Second on the list is Learners Needs which regards what the articles mentioned were important for the learners (not to be exchanged with Responsibility by learners which covers what the learners have to do by themselves). The data I wanted to extract through this code book is thus information regarding what I see relevant for autonomy learning strategies.

Data analysis and interpretation:

I now want to take a closer look at the information I have gained from the code book and the synopses of the articles. The first thing to notice is what I found to be the central themes. Not surprising does Learning Strategies rank as the biggest theme in the Code Book considering the whole theme I was doing my review on was strategies. Ranking second were Learners needs which involves what has been researched is important for a person to become an autonomous learner. Following comes (in mentioned order) Motivation, Responsibility by teachers/staff and Problems. These themes are not as representative as the previous mentioned. Following these themes is Limits, Responsibility by learners and Online Learning. At the bottom comes Involvement and Culture with the least codes.

Having identified the central themes of the texts I now wish to discuss the relationship between them. I do not seek to integrate outcomes or identify factors that covary with the outcomes but instead to understand the phenomena I am investigating (Randolph, 2009). First and foremost I wish to point out that it would seem that there is very scarce information regarding culture and autonomy learning strategies (only three identified codes in the Code Book). As the codes produced for the code book had the main focus of identifying either problems one could run into when trying to incorporate autonomy learning or identify the positive aspects of incorporation there naturally are a coherence between the code themes. It is interesting to note that Involvement was not as present.

In the article *The Strategic Development of Learner Autonomy through Enquiry-Based Learning* by Bramhall et. al. (2010) a Problem was identified and the authors make a bold statement which were only found in this one article. The statement reads as follows: “Most recent research agrees that autonomy is a developmental process that cannot be taught or learned.” (Bramhall et. al. 2010, p. 122). No other article in my review has explained the same problem, in fact quite the opposite. Instead of proclaiming that autonomy cannot be taught or learned, they provide different strategies as how to do so (as seen in the 68 identified Learning Strategies codes). Even more so Boud (1988) in his book quotes Little (1975) by saying: “There is no escape from the paradox of

leadership - the requirement that men should be *led* to freedom, that students be taught the autonomous style. (Little, 1975, p260)" (Boud, 1988, p. 24) although this was over 20 years earlier. In another article Weinstein (1987) argues that you cannot teach student an exact way of solving a problem, but instead can teach learners general guidelines to help them search for the best solution.

Another important thing to mention is the amount of articles regarding language learning. Even when trying to dodge these it seemed impossible. In the article by Nguyen and Gu (2013) they express that there has been a growing interest within learner autonomy within language learning for the last three decades. This is coherent with the amount of literature on the subject I have been going through, even without wanting to. As mentioned earlier (and in the article by Astuti (2016)) that some strategies can be transferred. Therefore it is important to stay critical regarding what to include.

Another theme I want to discuss is the link between autonomous learning and problem-based learning (PBL). In a great number of the articles there seemed to be an indirect link to what the authors believed to be working autonomy learning strategies and the philosophy behind PBL. In PBL the students are in focus and identify their own problem which they will work on, usually in a real-life setting. Nguyen and Gu (2013) expresses this in their paper by letting students think through their tasks instead of telling them what to do, the learners can work out their own solution to the problems. Bound (1988) also talks directly about PBL in his book, and how it relates to autonomous learning. Lee, Pate and Cozart (2015) argues that when students work on meaningful projects and become invested within said project, they get motivated. It would seem that autonomous learning has its place within the PBL paradigm.

When looking through the articles another aspect was also very prominent; the importance of the teacher (Lee, Pate and Cozart, 2015, Yang, 1998, Astuti, 2016, Nguyen and Gu, 2013, Vibhulphol, 2016). There is an ongoing theme regarding that the teacher has a great importance in motivating learners for them to become autonomous. These are remarked through the code Responsibility of the teacher/staff within the code book and was seen 22 times through the book. As motivation also was seen around the same time as Responsibility of the teacher/staff in the code book (25 times) it seems that those two themes goes hand in hand as for example showed by Vibulphol (2016) who argues that teachers have an important role in either undermining or enhancing the student's motivation. Also Yang (1999) makes several points linking teachers importance with motivating the

students. Having taken a closer look at the data extracted through this review I now want to conclude on my findings.

Conclusion:

One thing that is very clear is the fact that language learning has incorporated autonomy learning within its praxis. Therefore the literature regarding autonomy learning strategies will be heavily influenced by the language learning praxis. This should not be a problem because most strategies will be able to work in other contexts. Within the literature on autonomy learning strategies motivation is one of the key terms, ranging from learners needing to be motivated to teachers having to motivate the learners. There is a vast amount of strategies on how to motivate the students, far too many to list them in this review. The outcome of the autonomy learning strategy literature also clearly shows that the teacher plays a very important role in motivating learners and fostering autonomous learning. In the footsteps of this thought the paradigm of PBL also have many similarities with autonomy learning strategies and the role of the teacher. I can thus conclude that the outcome of the research done within autonomy learning strategies is heavily done within language learning, has focus on motivation, the teacher's importance and have similarities with PBL.

Justifying my research:

Looking through the data I have collected there are several factors speaking for this project being justified. First and foremost there is very little research done within using autonomy learning strategies in an online environment (found 14 times in the Code Book), and most of the information on the subject is linked to language learning, as is much of the research in general on this subject. There is a great number of usable learning strategies within the autonomy learning paradigm which will be useful for this project. Also worth noting is the lack of cultural research done on the subject which I will not have focus on in this project but could indeed serve as an important research question in the future.

In-depth look at prior strategies within autonomy learning

Within this section I want to dissect and categorize the strategies that I have extracted from the articles and books within the literature review. The idea behind this action is to get an overview of what strategies actually exists within the domain of autonomy learning. It is with this knowledge that I can continue tailoring a solution to answer my problem statement. In the following section the categorized strategies extracted from my chosen literature will have a short description regarding why they are in the same group. The strategies will not be tacit, but rather a description of an over-all strategy that can be personalized in various ways. It should be noted, that most of these strategies (except the ones that are counterparts) can be mixed and matched.

Personalization category:

The strategies within this category focuses on personalizing learning for the students. The main focus here is heavy involvement of the students.

Choice and engagement:

Giving the students a choice in the matter of what they are working with is a strategy that should help foster motivation and make the students take charge. The idea of letting students choose between several options will increase perceptions of internal control. This works as a bottom-up approach (Lee, Pate and Cozart, 2015, Astuti, 2016, Vibulphol, 2016, Nguyen and Gu, 2013, Ravi and Xavier, 2007, Scharle and Szabó, 2000).

Respecting students individual interest:

By respecting the students interests' the teacher can make the students feel more autonomous. This also helps the students being flexible in order to customize the learning so it connects with their professional, personal and academic interests. Also having the students wishes in mind creates a more supportive learning atmosphere and increased motivation. (Lee, Pate and Cozart, 2016, Yang, 1998, Kupetz and Ziegenmeyer, 2006, Bergamin et. al., 2012, Astuti, 2016).

Students working in meaningful projects:

This strategy involves the students working with a project that is personally meaningful to them. This will ensure they become invested in the assignment and that they stay motivated. Also if the

students works with a personal meaningful project they are more likely to complete the assignment (Lee, Pate and Cozart, 2015, Astuti, 2016).

Technological focus through organizational control/institutionalized strategy:

These strategies are highly specific in the matter that they are related to an organization or institution. This is thus a top-down strategy with little to no focus on the students, but rather the employees.

Teacher knowledge regarding technology:

An important aspect of fostering autonomy in learners through the use of technology starts from the top, with teachers and staff needing to have a professional knowledge of the technology that is being used, its pedagogically value and reflect it upon the learners (King and Boyatt, 2014)

Vision, leadership, support (technologically and pedagogically):

This strategy involves the necessity of a clear vision from the organization/institution, leadership to take charge of said vision and the support (of for example an IT section) for it to continue to work. Knowledge is needed of why the organization/institution uses the technologies they are using and the pedagogy behind it (King and Boyatt, 2014).

Face-to-face training + online guides:

The idea of this strategy is to use both face-to-face training combined with online developed guides to ensure everyone is up-to-date, and easily can find solutions if they have any problems with the technology that is being used (King and Boyatt, 2014).

Pedagogical strategies:

Pedagogical strategies within this category is identified as certain needs the teacher has to consider when trying to foster autonomy learning within students. The following strategies are examples of how this can be one.

Showing rationale for learning:

By showing students and learners the reason why they have to learn what is being taught can help motivate students, even in topics they might find uninteresting (Lee, Pate and Cozart, 2015, Astuti, 2016, Nguyen and Gu, 2013, Scharle and Szabó, 2000)..

Good student-teacher relationship:

To create a successful environment to foster autonomy learning it is important to develop a good relationship between the teacher and the students. It works as a motivational condition and is key in the usage of many of the other strategies mentioned in this chapter (Astuti, 2016, Kupetz and Ziegenmeyer, 2006, Punhagui and de Souza, 2013, Vibulphol, 2016, Boud, 1988).

Course strategy:

A course strategy involves the whole curriculum. The importance here lies within creating a strategy together with the students that ensure cooperation between students and teachers in finding meaningful subjects to work with. Also a course strategy should be developed where the students are co-planners, actively engaging in their own learning (Lee, Pate and Cozart, 2016, Kupetz and Ziegenmeyer, 2006).

Maturity level/consideration of student's knowledge:

An important thing to remember when developing a strategy is the maturity level or the background knowledge of the students. The same strategy would possibly not work in a fifth grade classroom just because it did in a university setting. Therefore this strategic thought involves making sure that your plan fits it's users. An example could be technologically inept students will need teaching tailored at a novice stage (Yang, 1998, Astuti, 2016, Bergamin et. al., 2012, Boud, 1988, Scharle and Szabó, 2000).

Heuristic strategies:

Heuristic strategies covers strategies involving the learner to reflect on method, practicing said method, receiving correct feedback and testing the limits of transfer. Basically a heuristic is an approach, a framework or a set of guidelines which could be formed out into a problem solving strategy (Weinstein, 1987).

Monitoring own learning:

This strategy is among the ones which is written about the most. In order for a learner to understand his or her own process monitoring is necessary. The monitoring helps to evaluate ones process (see more in the next strategy). Monitoring is mostly done through the use of a diary where the learner should reflect upon how the learning took place, and what strategies worked or failed. This should promote autonomous learning and encourage the students to take responsibility for their own learning processes (Yang, 1998, Kupetz and Ziegenmeyer, 2006, Weinstein, 1987, Nguyen and Gu, 2013, Zhong, 2008, Punhagui and de Souza, 2013, Bergamin et. al., 2013, Boud, 1988).

Evaluating own progress:

Evaluating own progress is a follow-up to monitoring own learning. As a strategy it helps the learner to reflect upon what learning strategies failed and which worked. The students thus identify their own needs and weaknesses (Kupetz and Ziegenmeyer, 2006, Ravi and Xavier, 2007).

Student self-regulation:

Having self-regulated students have been found to improve test scores. It has also been linked as a necessity within education in order to develop autonomy and independence. Therefore thinking how to make learners self-regulated is an important aspect when creating a strategy. (Nguyen and Gu, 2013, Cubukcu, 2009, Punhagui and de Souza, 2013, Bergamin et. al., 2012).

Rehearsal strategies:

Rehearsal strategies is formed from repeating. This could range from repeating order of the planets in our universe by distance from the sun, rereading paragraphs of a text or copying a text word for word (Weinstein, 1987).

Elaboration strategies:

This form of strategy involves adding symbolism to what you are trying to learn. This could be paraphrasing, summarizing, creating analogies or even using previous experiences in order to understand something (Weinstein, 1987).

Arrangement strategies:

These strategies focus on transforming information to a more understandable format. This could be arranging information or events, outlining a chapter in a book, making a conceptual map or

developing a hierarchy. Overall this strategy can be used to make the learning outcome more tangible and easier to understand (Weinstein, 1987)

Other strategies:

Motivation (of students or by teachers):
Motivation is spoken of in almost every article regarding autonomy learning. It is a key concept to the learning theory, and therefore this explanation will not go into details. Most of the other strategies named in this section has an initiative need for motivation to work. Although there is different ways of looking at where the motivation needs to stem from. On one hand it is of most importance that the students have motivation for their learning, or else the chance of failure is almost guaranteed. On the other hand the teachers needs to motivate the students, as they may not be able to do this themselves. Ways for the teacher to motivate the students have been discussed prior, such as through personalization of what the students need to learn (Lee, Pate and Cozart, 2015, Astuti, 2016, Punhagui and de Souza, 2013, Vibulphol, 2016, Scharle and Szabó, 2000).

Affective strategies:
Affective strategies is mainly regarding the environment the student is in while learning, but also about creating the right climate for learning. The strategy here is to either make a good learning environment for the students, or make sure they themselves know how to do so when learning on their own. It can range from finding a quiet place to study to using rewards or setting goals. The idea is to eliminate internal and external distractions (Weinstein, 1987, Astuti, 2016, Zhong, 2008, Punhagui and de Souza, 2013, Vibulphol, 2016, Boud, 1988).

By being creative:
The idea of using creativity as a theory is grounded in the fact that creativity might trigger learning. When being creative learners boost their self-esteem and their motivation, they think independant and are more likely to explore new ideas (Akinwamide, 2012).

Algorithmic strategy:
An algorithmic strategy is more of an overall strategy, and is the opposite of heuristic strategy. Some students' cognitive processes are in nature algorithmical. The idea is that there only exist one right way of implementing something, and the way to learn it is through copying something

already existing, like when following a recipe. The way of teaching this, is by presenting many examples in order to clarify what you are trying to learn.(Weinstein, 1987).

Problems as stated in the MAGAART evaluation report:

With the information regarding strategies that can be used to foster autonomy learning I now want to look closer at the needs of the attendées of the MAGAART workshops, with focus on technology. In order to get an understanding of the needs (and prior problems) I will consult the MAGAART report and look at the data that was extracted from the project. First and foremost I wish to show these three quotes from the conclusion if the MAGAART report:

For instance, the possibility to temporarily increase bandwidth when needed seems to be a viable approach for doctoral education.

As a whole, the broader use of web tools that the participants have been exposed to, was not sustainable. This goes both for Moodle as well as Dropbox, Zotero, etc. It remains questionable whether courses should be the main instrument for encouraging appropriation of educational and research technology.

*An online community of practice did not succeed to establish, neither on Moodle nor on email. There are many successful establishments of online communities, and also many failures. Whereas the potential is high, so is the risk. It seems that the need for such community is not so great that it overcomes any tactical mistake or competition. While it is not possible to make any confident recommendations, it seems safer to build on existing relationships thereby growing participation more organically, and make them more open (in order to attain critical mass), and hope that the attract more participation (*Zander et. Al., 2016, p. 29*).*

Besides these concluding remarks on the technological problems that arose during the MAGAART project I also want to discuss some other points made throughout the report. An important note was that it was necessary to boost the infrastructure, or else the e-learning activities could not be done. The internet connection is not efficient. It was also noted, that if there were to be a widespread adoption of e-learning it is necessary to increase the ICT skills of the faculty through, for example, coaching (Zander et. Al., 2016, p. 4). Throughout the workshops three aspects were identified which was of importance:

1. Readiness for e-learning
2. Lack of continuity

3. The experience of share knowledge and interact with others (Zander et. Al., 2016, p. 10).

It was found, that a common problem among the participants was lack of continuity (Zander et. Al., 2016, p. 13). There is also a note regarding the bandwidth problem inhabited in the South universities. It goes as follows:

*Downgrading (a) seems to not be a generalizable strategy. That means that future activities still will need to rely on budgets with provision of equipment/services and technical assistance – but that is an extra cost comparable with food. However, it is not possible to use the MAGAART piloted modes for spontaneously organized activities between a few scholars (*Zander et. Al., 2016, p. 16)*.*

Finishing off, the report considered that participants might have experienced information overload, and had a hard time figuring out how to use the things they learned in practice (Zander et. Al., 2016, p. 28). This information will become the backbone (together with the following section) in regards to structurizing a strategy to foster continuous usage of e-learning tools at South universities.

Excerpts from MAGAART interviews:

In this section I want to highlight some quotes from the interviews that was conducted through the MAGAART evaluation. The quotes will be in regards to problems with technology within the workshops and the initiative. It should be noted, that although there were different problems with the usage of online tools the common voice of the participants was of enthusiasm towards using them. The following statements may have been minor, or underlying some of the problems named in the MAGAART evaluation report, but are not explicitly present within the report.

Tool problems:
One attendée explains when asked if he/she had any prior experience with online workshops before: “No, I have not had any experience from online mode before” [A1] with a similar quote later when asked about the negative aspects of the software used: “Due to lack of skills of technology, it makes us panic while exploring” [A1)].

This notion of not understanding the technology and online tools being used were also seen in other interviews. A respondent from the Data Analysis workshop explains the following when asked which e-learning tools stood out:

> *Respondent: The webcam and face to face. I have never been introduced to that kind of technology before. Although we have E-compass?(12:58) here. I remember Britt invited us to this kind of engagement some four years ago. But we did not understand it, and did not think it sounded relevant so we ignored it. So we were training how to use webcam [A2].*

The same respondent gives an answer alike when asked if he/she liked the chosen e-learning tools: “Respondent: Yes yes. We are very new to this technology.”*[A2].* The notion of technology and e-learning tools being either hard to use or being something the attendées have never used before is seen in many of the interviews, which seems disturbing to the users. An example of this is seen in another interview from the Data Analysis course: “Yes I can give credit to Big Blue Button as well as the workshop but some time technology can create disturbance, such as low internet speed and lack of knowledge regarding the applications. Anyway it is fruitful, strong and we learn enough from it.” [A3]. The following quotes support the readiness for e-learning aspect mentioned in the report. What should be noted is that it might not be “just” lack of readiness (due to the fact that many of the respondents showed positive attributes towards the usage of the tools), but

instead a problem of readiness for using e-learning tools. Also attitude might be a problem, as a respondent who attended a workshop said: “To me the use of very sophisticated tools in supervision may not be very necessary.” [A4]

Moodle problems:

Another problem that I located in several interviews were more specific in regards to tool usage. Many respondents found it troubling using Moodle. This is of significance due to the fact that Moodle was the focus point for the Online Learning Environment. In the MAGAART Evaluation Report it is mentioned, and that it might not be a sustainable solution for encouraging appropriation of educational and research technology. It is not stated exactly why, which I will look further into here. As stated in the MAGAART Evaluation Report:

> *The pilot courses generally give support to the decision by all three institutions to rely on Moodle as the main component of their Online Learning Environment, although Moodle benefits from complements e.g. in the form of BigBlueButton or open web-based services like Dropbox. (Zander et. Al., p. 3).*

An attendée of the Conflict Management workshop, when asked about if he had ever heard of Moodle before the workshop, answered: “I have done some small training in Moodle. We are very backwards on using Moodle online in academics [A5]. Another respondent who attended the Data Analysis workshop got the same question and answered: “This is technology I was just oriented to. I do not know how it functions. I know that Betty told us how to log in. My name, my password.” [A2]. Yet another respondent attending the Data Analysis workshop explains similar thoughts regarding Moodle: “I am also in the learning phase. This is my third time participating on Moodle. I feel it is excellent.” [A6]. Finally I want to point out an attendée from the Conflict Management workshop who expressed the following when asked if he found Moodle easy to use: “It is hard but after reading instruction you can use Moodle and I did improvements. Other persons also help us to use Moodle.” [A7]. Like abovementioned there is a problem for the attendées at the MAGAART workshops in regards to using Moodle. Since Moodle is the assembly point for the online learning as a whole, this could be troubling.

Closing remarks:

Summarizing, I have diagnosed a problem in relation to the MAGAART workshop user's usage of e-learning tools. A majority of the interviewed attendées is at a low level of experience, thus novices in the world of e-learning tools. Specifically Moodle could rise several problems if it is used

as a main platform for the online learning part since the users had several issues with this tool as well. It is thus necessary to consider the lower level of experience as a main factor if one is to make users continue in using e-learning tools forward. I will argue that a low level of knowledge in relation to using something (in this case e-learning tools) gives a much higher chance of failure when exposing novices to new technology. In this case Moodle was launched before the workshops were held and thus a minimal introduction to the tool would have been present. In order to understand how one moves from the level of a novice and upwards I want to discuss Dreyfus and Dreyfus' Five stages of skill acquisition in the upcoming section.

From novice to expert:

In order to understand how the learners at the Southern universities can continue to use e-learning tools I want to take a closer look at the route from novice to expert. This section is written on the background of Dreyfus and Dreyfus' Five stages of skill acquisition. This is included in the thesis in order to get an understanding of how one goes from a novice to an expert, taken that a large amount of the MAGAART workshop attendées were novices to the newly shown technology. In the following section is a description of the five stages:

Novice:
A novice sees things context-free; they do not have any reference in regards to a larger scheme of things and cannot put it in perspective. They recognize objective facts and features in relation to the skill they are learning. Also the novice evaluates his own performance by his ability to follow the rules which he or she has learned (Dreyfus and Dreyfus, 1986).

Advanced beginner:
At this level the learner has some experience manifested in real situations. The facts are more context-free and more sophisticated rules are used. The learner has an enlarged conception of the skill they are learning as en entity, and the rules and behaviours are now more situational. Here experience is important, more so than verbal descriptions (Dreyfus and Dreyfus, 1986).

Competence:
Here the learner has been taught to adopt a hierarchical procedure of decision-making. The learner here sees situations as a set of facts, and the presence of other facts determinates the importance of those facts. At this level it is not as objective as it was for, for example, the novice where it was context-free. The learner chooses a plan which determinates the learners behaviour. The choosing of a plan makes the learner feel responsible, and thus becomes emotionally involved within the choices (Dreyfus and Dreyfus, 1986).

Proficiency:
Here the learner is deeply involved within his or her's task, and experience it from a perspective in relation to recent events. The learner draws from earlier experiences which has been a success, and anticipates the same result as that time. At this level the learner, although being intuitive in

regards to understanding and organizing a task, still finds him/herself thinking analytically about what to do (Dreyfus and Dreyfus, 1986).

Expertise:

The last stage, where the learner knows what to do based on a mature and practiced understanding of the subject. The learner do not see any problems in working at solving issues in a detached way and he or she does not worry about the future, or to devise any plans. Being an expert is something one might not be aware of, as it is a part of a person (in the same way one is not aware of one's body). If things are going accordingly, normally, the expert does not solve any problems nor do they make decisions. Instead they do what would normally work. Expertise fosters fluid performance, and behaviour needs no thought (Dreyfus and Dreyfus, 1986).

Afterthoughts:

Ideally what is sought after is to make the Southern universities student's, professors and staff experts, and thus incorporating e-learning tools into their daily routine as a part of them. This might be possible in the long run, although will be hard to do through a short-term solution. Unlike riding a bike technology changes constantly and thus there is a need to follow the stream of new knowledge. I find it to be wise to consider the five stages of skill acquisition within the strategy I am creating because the users of the workshops within MAGAART were described as what fits novices in many ways. Taking the learners from being a novice, and moving them up the scale could prove useful in trying to make them understand the benefits of using e-learning tools.

Economy and budgeting:

As this strategy is to be used in a Southern university it is necessary to include a chapter on economy. As the South is still in development (and being supported by the Western civilization in this case through ICD4D (ICT for Development) initiatives) one cannot assume that money is no issue, and that they can use every resource at hand. As described earlier a main problem was the broadband connection issue which can only be fixed by donating money. In order to recreate a realistic picture in regards to what funds could be used in a similar case I want to highlight the budget that was given to be used within the original MAGAART initiative. Below are the total budget provided for the project:

Location:	Denmark	South
Budget in DKK:	2.158.874	2.591.125
Percentage of total:	45 %	55 %

Total sum: 4.749.999 DKK.
(MAGAART Projekt Dokument Budget, 2014, p. 2)

The money were split for each university, and the money was allocated as seen below:

University distribution:	Total:	Percentage:
AU	959.626	20 %
AAU	599.624	13 %
RUC	599.624	13 %
GU	629.200	13 %
MSU	902.050	19 %
TU	1.059.875	22 %

Grand total:	4.749.999	100 %

(MAGAART Projekt Dokument Budget, 2014, p. 3)

Lastly I wish to show the budget by activities (workshops etc.):

Row tables:	Total in DKK:
Academic Writing (PhD)	124.950
Audit	40.000
Coordination	408.150
Data Analysis (PhD) Module 1	155.600
Data Analysis (PhD) Module 2	155.600
Data Analysis (PhD) Module 3	155.600
Development of Research Applications	671.627
DK Mapping of E-learning Resources	0
Evaluation of E-learning/PBL Pilot Project	312.010
Initial Workshop at TU	360.740
Needs Assessment at GU	32.100
Orientation Workshop with PhD Supervisors as Primary Target	154.490
Outreach Activities	166.920
Proposal Dev. and Lit. Search WS (PhD)	267.800
Radio Dissemination	21.400
Research Methods and Methodology (PhD)	241.050

SDR Conference	590.275
Thematic Dissemination WS	171.200
PhD Supervisor Forum	113.100
Community of Management Practice	42.420
Experience Sharing WS for Study Stays Guarantees (2013)	25.318
E-Learning Strategy at GU	37.450
Learning Infrastructure Support	502.200
Grand Total:	4.749.999

(MAGAART Projekt Dokument Budget, 2014, p. 3)

The information provided above will serve as a basis in my estimate on how much money will be necessary to spend on the strategy. Especially the Learning Infrastructure Support is of importance as this covers better broadband and infrastructure, which was one of the main problems found within the MAGAART evaluation. In the following sections I wish to conduct two various strategies; one with economy in mind and one that has not (an ideal strategy if economy was not an issue). In creating an economic-driven strategy I thus stride towards creating a tangible solution that can be used in a real-life practice. The main focus on the economic-driven strategy will be to make it as cheap as possible in order to minimize constant handouts from outer stakeholders.

Enumeration of problems that might hinder sustaining e-learning usage:

In this section I wish to summarize on the known problems that has been presented throughout the thesis thus far. It is after this list that the initial strategies will be deviced, trying to eliminate the listed problems.

Bandwidth and infrastructure:
One of the major issues in using any online technology in the Southern universities is bandwidth. The connection is poor, and in order to establish a proper one sacrifice of other resources is either necessary or a money dump on an infrastructure upgrade, permanent or temporarily.

Unsustainable tools:
The tools presented to the participants were not sustainable. The ground thought that courses should be used in order to stimulate the lust of using tools for research and education is questionable.

Users being novice users of technology:
Linked to the above mentioned problem is the element of the users' IT skill level. Most of the participants had very little to no experience with the e-learning tools, and thus either gave up on trying them or at the very least found it troubling.

Information overload:
The participants were introduced to a variety of completely new technologies altogether with academic knowledge regarding either writing their PhD or supervising PhD students. Therefore the participants might have gotten too much information for them to process resulting in low to no adaption of the new tools.

No established community of practice:
Throughout the workshops (both pre-workshops and the face-to-face ones) a community of practice was to be established online, mainly through the use of Moodle. It happened in some cases, but definitely not in every case. The main idea of having the participants interact with each other and share their knowledge online did not happen in the wanted manner.

Moodle not being used enough:

As Moodle was set to be the home base of the operation online it was important for participants to make use of it. This did not happen because the students did not know how it functioned, and had troubling learning how.

Lack of continuity:

A major problem, the one which gave reason for this very thesis, is the problem of the participants not using the e-learning tools onwards after the workshops.

Advice from the MAGAART Evaluation Report:

In closing this chapter I wish to once again highlight a section of the report. It serves as advice on what would not be wise in regards to strategy-making. It goes as follows:

*Downgrading (a) seems to not be a generalizable strategy. That means that future activities still will need to rely on budgets with provision of equipment/services and technical assistance – but that is an extra cost comparable with food. However, it is not possible to use the MAGAART piloted modes for spontaneously organized activities between a few scholars (*Zander et. Al., 2016, p. 16)*.*

This information is relevant and interesting due to the fact that I seek to create a tangible, low-budget solution to the problems. It is ill advised to downgrade although also impossible to rely on money donation constantly being given year around to the Southern universities. These listed problems are thus the ones that have hindered a sustained usage of e-learning tools after the MAGAART project has ended. Some of them more important than others, and more expensive. In the next chapter I wish to propose a strategy devoid of economical problems, an ideal strategy in an ideal world.

The ideal strategy:

In this chapter I wish to address the strategies that can be used in order to answer my problem statement. In this chapter I wish to propose a strategy on how best to make the users at the Southern universities continue using e-learning tools on a long-term basis. This strategy will not consider funds and economy what so ever, and will thus this strategy might be unrealistic from an economic viewpoint. This chapter will discuss the problems outlayed from the MAGAART workshops that has been conducted and how the autonomy learning strategies I have identified can influence users in using e-learning on a long-term basis.

First, it is important that the university has a proper bandwidth and infrastructure. An unstable or low bandwidth will inevitably create issues that will influence whether or not the users will continue to use e-learning tools. Lagging, long loading time or simply inability to gain access is a big issue. Therefore a permanent boosted bandwidth will serve as the foundation for this strategy.

After having settled the first problem (bandwidth and infrastructure) I now want to look into how the other identified problems can be resolved. A general problem that was identified were that some of the e-learning tools that were presented to the participants were unsustained. The unsustained issue might be linked to two of the other problems identified; namely information overload and lack of continuity, and even more so linked to the fact that most of the participants were novice users of technology. Therefore I wish to discuss the level and background of the participants prior knowledge in regards to e-learning tools, and how having this in mind can help foster autonomous learning.

Looking at the starting skill level of the participants seems to be a good place to begin. At page 27 I identified strategies focused on pedagogical aspects. In this category one strategy involved considering the students' maturity level and their prior knowledge (Yang, 1998, Astuti, 2016, Bergamin et. al., 2012, Boud, 1988, Scharle and Szabó, 2000). This is done to ensure that the students' are not being taught anything at a higher level (here referring to Dreyfus and Dreyfus' Five stages of skill acquisition) than they are placed at. From the information gathered through the interviews and the results of the MAGAART Evaluation Report it does seem that the participants from the Southern universities within the MAGAART initiative were novices in relation to using e-learning tools. One can argue that a reason for the participants to discontinue using the tools after the workshops and courses might be because they were not taught how to use the tools on a

novice level, or at least from a novice's standpoint. On this subject I wish to quote the MAGAART Evaluation Report which states the following: *"*It remains questionable whether courses should be the main instrument for encouraging appropriation of educational and research technology." *(*Zander et. Al., 2016, p. 29*)*.

This strategy will thus have the baseline that the e-learning users at the Southern universities are novices in relation to using e-learning tools. Although the previous quote debates the value of teaching those technology through courses the idea should not be completely dismissed. Looking at the novice, they have a context-free view of what they are learning of (Dreyfus and Dreyfus, 1986). Therefore the novice is in need of a higher knowledge-leveled individual to guide him or her onwards throughout the e-learning jungle. What is meant by this is that the novices needs some element to help them progress in their knowledge of the subject. A good way of ensuring this is through courses. A teacher with a higher knowledge of e-learning tools would be able to break the barrier of the context-free thought process in which the novices are placed. The expert will then carry out the work without being consciously aware of it, much like one does not think about moving their own body (Dreyfus and Dreyfus, 1986). Moving away from the context-free environment of the novice, the expert will, in this case, have knowledge of different e-learning tools and their place in academic writing. The user will know how to operate them without constantly having to remember how the tool works. The presence of a teacher is not a must as this can be done through instructions as well (videos, texts or other media). What is needed is an element that can make the novice ascend from their early knowledge state onwards to a higher level.

As this is an ideal strategy the best source in order for the Southern university novice e-learning users to succeed in climbing the skill acquisition ladder is by learning from a teacher. Within the MAGAART initiative the participants initially had to use Moodle in relation to pre-workshop assignments. With a lot of the participants being novices and only having received minimal guidance in how to operate the platform issues could arise. Therefore early guidance and training in using the tools is necessary to ensure that the users have a higher-level understanding of the tool and the context. Before diving further into this subject I want to discuss another important element to consider.

Considering what the users want:

Within autonomy learning motivation is key. In order to motivate the users into using e-learning tools some strategies is needed. One way of motivating learners is to incorporate learner's choices. Having the learners choose what they want or need to learn has been found to foster

motivation (Lee, Pate and Cozart, 2015, Astuti, 2016, Vibulphol, 2016, Nguyen and Gu, 2013, Ravi and Xavier, 2007, Scharle and Szabó, 2000). This goes hand in hand with respecting students' individual interests when seen from the teacher's side. By respecting the interests of the learners, students feel more autonomous (Lee, Pate and Cozart, 2016, Yang, 1998, Kupetz and Ziegenmeyer, 2006, Bergamin et. al., 2012, Astuti, 2016).

When the learners understand the purpose or rationale for what they are learning they also tend to be more motivated (Lee, Pate and Cozart, 2015, Astuti, 2016, Nguyen and Gu, 2013, Scharle and Szabó, 2000). In the interviews a person uttered: "To me the use of very sophisticated tools in supervision may not be very necessary." [A4] which points to this issue (more specifically that the users' interests maybe were not met, but may also be lack of understanding of what the tool(s) can be used for). Lastly this is linked to the learners working on something they find meaningful. When learners have a personal connection with the very thing they are learning, motivation and autonomy will be higher (Lee, Pate and Cozart, 2015, Astuti, 2016).

The above mentioned information points towards the importance of incorporating the interest of the users into the teaching. Granted that most of the MAGAART participants were novices to e-learning technology they will only have knowledge of few (or no) tools. Therefore tailoring a solution without any afterthoughts seems ill advised. It is important to heed the call of the Southern university users in order to understand what tools will be beneficial for them to use. Although the previous held workshops did take some precautions in regards to what they wanted to teach the Southern participants, this might not have sufficed. Before the workshops were held the Western universities (the danish universities) underwent a few interviews, gaining data on what could be of interest to teach within the workshops. The workshops were also sent to the Southern university partners for them to oversee and comment on. When this is being said one can assume that the workshops were created in a Western context. It is debatable if this is a correct approach although to gain a clear answer to this question it would be necessary to complete a major cultural investigation. As mentioned effort were put into understanding the needs of the Southern users although it might not have been enough. The tools that were presented within the MAGAART workshops were e-learning tools that the Western university teachers used themselves which does not necessarily translate into something the Southern universities would find useful. To take an example, users found video conferencing to be interesting and being able to see the relevance in using it, this specific tool might not be sustainable for the Southern users to use, or even necessary. The point being that it is necessary to investigate the needs of the users before

committing to certain tools. The need assessment of the Southern university users will have to be more thorough than the one conducted before the MAGAART workshops were executed.

As mentioned earlier the Southern university participants is at a novice level. Therefore they probably do not know the vast array of e-learning tools that exists. To ensure relevance for the Southern university users I thus propose an investigation is done in order to gain an understanding of what the specific university is in need of. Once again I wish to outline the previous need assessment done in relation to the MAGAART case. Some interviews were conducted and the workshop ideas and thoughts were shared with the Southern universities to ensure they would be relevant. I want to argue that the universities within the South might see the Western universities as a sort of “big brother”, who has more accumulated knowledge, technologically advanced staff members and a better judgment of what is needed in their context. This somewhat blindness to their own needs (and rather wanting to become more like the West) could potentially create blind enthusiasm that could neglect the Southern universities of information they might actually need, instead of what they want. The idea of Southern universities striding towards being more technologically enhanced, and being more “Western-like” is not necessarily a problem but rather an element to be thought through. In the context of this thesis I thus propose an investigation on what tools the Southern universities *need*, instead of what they *want* (this may vary from university to university).

As this process needs to be unbiased (what is needed, not what is wanted) the best way to gain this information is without the participants being aware. Before this is heading towards an ethical debate I want to point out that the gaining of this information should be done only after explaining the participants that the information is being gathered, with their consent. That being said it should not be done in any way that could be considered neither illegal nor unethical. Picking up from the beginning, it is important that the gathering is unbiased. For this to happen the first step should be not to explain to the participants precisely why the data is gathered, but rather what the data will be used for (in this case tool evaluation). Also I would suggest that little to no interaction with the participants should take place. With these criterias in place I thus want to discuss strategies that can be used in order to gather the information regarding what tools would be best to train the participants in using.

To understand what e-learning tools would be wise to introduce to the Southern university participants I will argue a valuable asset would be to investigate what they are using already (nb: not necessarily e-learning tools, but tools in general for their academic work). These tools will

range all the way from pen and paper to sophisticated e-learning tools. I propose two different methods of gathering this information. The first method will require at least one person in order to gather the information. This person (or several, depending on how thorough the investigation needs to be) will do a somewhat ethnographic investigation into what the students, supervisors and staff members are using in their academic work. This fly-on-the-wall principle will ensure that the investigation is as unbiased as possible. This person will thus ask the people that is being investigated if he or she can observe them working, and if necessary ask them what they are using (if they are using an unfamiliar tool for example). The observations are thus typed down and deconstructed at a later stage in order to understand what the core value of the tool is (to take an example, if a person is using Microsoft Word and Dropbox a likely alternative could be Google Drive). This investigation can either be on a large scale or a smaller one depending on the size of a university or the amount of people who are part of, for example, a workshop.

This first way of gathering the data is both time consuming and require man hours, ie. someone paid to do it. In order to gain the information in a different way I thus want to propose another strategy. This strategy will arguably be more unbiased. The idea I wish to propose is using logging data. The university will thus make a list of known e-learning tools and their respective websites (for example Dropbox.com, Google Drive, Zotero etc.) and track the traffic on these websites on their infrastructure. To make sure this is not unethical the students and staff members of the university should be told thoroughly that this information is being gathered, that it is only traffic on the respective sites and in no way an investigation into the student's total web usage. Through this method information can be gathered in relation to if the students already are using e-learning tools, and in that case, which ones. With the results stemming from the outcome of these two investigations, specific tools should be tailored to the need of the participants.

Learning and teaching e-learning tools:

We now have a strategy to understand the needs of the learners. The outcome of this strategy might vary from university to university, which is not an issue. I now want to discuss how the Southern universities will learn how to use the tools. This section thus deals with the idea of moving the novices up the skill acquisition ladder. Due to this fact I want to discuss what kind of users I seek to create, in relation to Dreyfus and Dreyfus' ladder. The term expert is broad, and there is a need to specify what kind of expert (if they even have to be experts) the Southern university users needs to become. I also want to reflect how moving up the ladder is linked to autonomy learning. I will start out with the first mentioned.

As this thesis is directed upon e-learning, this will also be the subject the users need to become better at. The users will need to acquire a mature and practiced understanding of this subject (Dreyfus and Dreyfus, 1986). It should be mentioned that e-learning is also quite a broad subject and thus needs to be specified. As one cannot master every e-learning tool that exists I will point back to the survey strategy written in the previous chapter. The e-learning tools that will be identified as useable within this survey will serve as the basis for what the users needs to become experts at. Again, this will vary from case to case, but the idea and outcome is the same. I seek to make the users expert users in the chosen e-learning tools for one reason: when the users have a large understanding of a certain tool (or tools), and figure out for themselves that the tool(s) they are using are not enough, they will actively search for tools alike, or completely new tools. The expert understands the subject of interest, and knows what to do in order to fix any problems, like finding new usable tools. This is also what is the basis of autonomy learning; actively on your own expanding your knowledge on a certain area, and fixing problems without the help of a teacher or tutor. In relation to this thesis I thus want the Southern e-learning users to be able to expand on their tool collection by themselves. I will argue that the expert e-learning user will be able to actively and without trouble search for new tools and stay up-to-date with the ongoing development of e-learning tools.

It is thus in the best interest to create expert learners in order to create autonomous learners in relation to e-learning tools. The goal is to make e-learning an incorporated part of the Southern universities users academic life. Not only that, but also making the users able to use the tools fluid without thinking about it. For now I want to focus on how the e-learning aspect can be incorporated into the universities, in a learning context. A pedagogical strategy addresses this by incorporating it into the curriculum. This course strategy involves the whole curriculum, and is made to ensure learners are co-partners in the learning, actively engaging in it (Lee, Pate and Cozart, 2016, Kupetz and Ziegenmeyer, 2006). Incorporating e-learning into the curriculum could be a valuable asset as it shows the importance of the tools to the students. It should be noted that the set of tools to be incorporated should not be pre-defined but rather exploratory. What is meant by exploratory is that the students themselves can pick and choose which tools they will find necessary. When this is being said it is valuable for the institution (the university) to have a supported *learning management system* (LMS). Within MAGAART, Moodle was used throughout the workshops. Moodle is a LMS that can be personalized in ways that suits the users (Moodle, 2016). Within MAGAART Moodle was used in several ways ranging from telling participants what the workshops will be about, to uploading literature, peer-to-peer debating and doing assignments. It should be

noted that some of the participants in the MAGAART workshops found Moodle hard to use and were in need of more training than what they initially received.

I will argue that having Moodle incorporated into the curriculum can serve as a valuable element. It serves as a meeting point for both staff members and students. It is easy to set up a forum where students and staffs can communicate with their peers. On Moodle students and staff can actively help each other and learn from each other. Having a institutional backed LMS also sends out a message in regards to using e-learning tools; it is condoned by the university. Following discussion earlier regarding how the tools should not be pre-chosen I wish to make a comment. Because Moodle can be optimized and personalized in a great many ways it serves as a great tool. The university can pick and choose which assets they find valuable themselves, and can set it up to match their own criteria's and standards. Also having the institution choose a main meeting-point for both students and staffs, on a professional platform (where the opposite would be Facebook) is advisable. Having Moodle integrated into the everyday life of the university students also have to continue using e-learning to some extent. That being said, upholding a functional Moodle infrastructure does take considerations which I want to discuss. It is important that Moodle is updated whenever a new version is available. There is a need for an educated IT staff to fix any bugs or other problems that might occur. Even more so there will be a need of greater knowledge amongst the staff and teachers as they will be the ones operating Moodle in the sense of changing the content. Here I want to differ between three different expert users.

1. The IT department: Need to be experts on a technological level knowing how and when to update the system, how to identify and fix bugs and problems and uphold tech support. The expertise here is more of a supportive nature.
2. The teachers and staff: Need to be experts on an operating level knowing how to create new rooms, forums, wikipedia's etc., upload documents, edit and delete existing posts, rooms, etc. and giving the appropriate people access. The expertise here is more of a management nature.
3. The students: Need to be able to find the rooms, forums, wikipedia's etc., download the files they need, communicate through forums etc. The expertise here is more of a common user with no necessary knowledge of what goes on 'behind the scenes'.

The list is also hierarchical in the sense that the IT staff will hold the most (technical) knowledge of Moodle, whereas the staff and teachers does not need the same know-how, and lastly the students who only needs to know how to operate the LMS. This top-down view has been pointed out in the

section where strategies is identified (page 27). The first one is “Vision, leadership, support (technologically and pedagogically)”. The strategy states that the institution needs to show leadership and take charge of a vision (here it would be Moodle) and support it (here through the IT department). Besides that it is important that the institution knows why the technology is being used, understanding the pedagogically thought process (King and Boyatt, 2014). With this information at hand I wish to look at the MAGAART case. The usage of Moodle within MAGAART ran into problems with some users having a hard time navigating the platform, forgetting passwords and in general forgetting how to operate it entirely after the workshops. There were no follow up or institutional vision of using Moodle onwards (and if there were, it would not have been strong enough). I would argue that the previous mentioned strategy could be a solution to the problem and thus help in sustaining Moodle as an e-learning tool.

Incorporating Moodle into a university’s everyday life thus starts from the top. It stands and falls entirely on staff, teachers and the IT department. On this subject another strategy goes hand in hand with the previous mentioned one: Teacher knowledge regarding technology. This strategy emphasizes that staff and teachers need to have professional knowledge of the technology that is being used, know the pedagogically value and reflect these things upon the learners (King and Boyatt, 2014). It is thus important that the users know the rationale behind using said technology (which in itself is also a autonomy learning strategy). When looking back at the hierarchy of Moodle-users I want to title the IT department and the teachers and staff members as *superusers*. By creating these superusers the institution thus gets a group of educated users within the tool (here Moodle) that can project their knowledge upon a wider audience and serve as guides. To put this in the context of the thesis I thus propose that the IT department is trained in relation to their role and teachers and staff according to theirs, in relation to using Moodle. This should be done with help from the Western universities by holding workshops specifically aimed at training these two groups of users. The workshop will only be in relation to Moodle, and will be different for teachers than for the IT department (IT department needs training in updating and upholding, which is unnecessary for teachers and staff members). After end workshop these superusers should be able to handle Moodle going onward. It works as a top-down perspective where the top-superusers hold a vast knowledge which they project upon the students attending the university. It should be noted that the projected knowledge from teachers and staff to students is only in relation to operating Moodle. If there is any issues with operating Moodle the teachers and staff can work as guides and help out with common issues (or even craft specific information for the students about using Moodle). By somewhat forcing the usage of Moodle from the university’s standpoint

also ensures continuity. With constant usage and updating it will eventually serve its place within the daily lives of the university.

This takes care of the Moodle problem and should help ensuring a continuous sustained usage of Moodle within the university. Having a main platform for e-learning from the university serves as a good baseline. I now wish to discuss how the e-learning tools that would be diagnosticated through the information gathering, and what strategies can help these tools being used in the long term. Before diving into this subject I wish to discuss one of the diagnosed problems within the MAGAART evaluation. Information overload seemed to be a problem for some of the participants. Introducing too many completely new tools within a short span of time tend to make the users forget how they work or mix them together. A way to eliminate this problem is thought into the information gathering process (in relation to learning what tools the participants could be interesting in learning). When one has the information of what tools the students already use, they will be translated to e-learning tools. For example using Dropbox + Microsoft Word could be substituted by Google Drive. Within this process one should be careful of not picking too many tools for the students to learn. The idea of using the student's previous tools as an example in order to explain the benefits of the e-learning tools is backed up by a strategy: Arrangement strategies. This strategy revolves around transforming information into a format that is easier understandable by the learners (Weinstein, 1987). This provides a rationale for why the e-learning tool should be used and potentially helps with information overload due to the similarities that might have been between the learners old tool and the new tool.

Finishing off this section I want to describe who should be teaching the students about these tools, and why. It is important that the Southern universities in the long run will be able to handle this process by themselves. But as was found within the MAGAART evaluation this cannot be done right away. Since there are users who still are novices to the use of technology and e-learning there is a need for education on this area. Therefore I propose that the Western universities/partners act as teachers and mentors within this process. Following in the footprint of the MAGAART initiative I thus propose a line of workshops is held where the participants is teachers, counselors and PhD students. I thus again want to point to a top-down strategy where the teachers harbor the knowledge which they can pass on to students during classes. Prior, in the MAGAART initiative, workshops have been held trying to teach the participants how to use several e-learning tools. Within this proposed workshop it should be noted that the tools in question comes from the investigation. It is thus probable that different tools will be taught at different universities. The workshop should be constructed in such a way that it creates autonomous learners. In order

for this to take place I want to discuss what strategies that can be used in creation of the workshop in order to enhance user autonomy.

In order to explain how a workshop could be created I want to split it into different phases: the teaching phase, the exploration phase, the rehearsal phase and the evaluating and monitoring phase. The first phase, teaching phase, is straightforward and involves classroom teaching of the tool(s), how they work, their relation to previous tools etc. The participants can follow on their own computer. There is not much more to this first phase as it is emphasized on sharing general knowledge of the tool(s). In the second phase of the workshop participants have to explore the tools themselves. Here the participants can be creative, going through the tool(s) by trial and error and be assisted by the teachers if need be. This phase is made with autonomy in mind as the participants have to learn by themselves. Also creativity can trigger learning, motivate and boost self-esteem (Akinwamide, 2012). The next phase is the rehearsal phase. This phase is based on Rehearsal strategies, in which repeating an action leads to knowledge (Weinstein, 1987). The participants will be asked to go through the respective tool(s), perhaps even showing class how they work. Emphasis should be that the participants continue this rehearsal after the workshop. The last phase is the evaluating and monitoring phase. This phase is based upon two autonomy learning strategies: Monitoring own learning and Evaluating own progress. Monitoring is needed before evaluating takes place. I thus propose that this phase is done after the workshop online, for example on Moodle. A room should be constructed for the participants to use somewhat like a diary. Here the participants reflect upon the tool(s) they have been taught and how they can/are using it in praxis. This should help the participants in inquiring autonomy by them taking responsibility for their own learning, in this case by continuing using and learning how to use the tool(s) (Yang, 1998, Kupetz and Ziegenmeyer, 2006, Weinstein, 1987, Nguyen and Gu, 2013, Zhong, 2008, Punhagui and de Souza, 2013, Bergamin et. al., 2013, Boud, 1988). When this has been done over a period of time the last assignment is to evaluate the progress the participants have made. This process is a follow-up to monitoring, and helps the participants reflect upon what worked and what failed within trying to learn how to use the tool(s) (Kupetz and Ziegenmeyer, 2006, Ravi and Xavier, 2007). These diaries and evaluations are thus read by the teachers of the workshops and responded to if needed. It should be noted that it is valuable to teach the participants to continue this self-evaluating and self-monitoring strategy even after end workshop as it helps to foster learners autonomy. By evaluating themselves the participants will be able to reflect upon the problems they are having, identify solutions and understand their own learning patterns. By creating this tailored workshop to the participants, taking their expertise level into consideration and relating the tools they have to learn with tools they already know it should be

much easier for the participants to understand the tools. It will bring context to the tools and ensure they continue to expand their knowledge in regards to the tools by focusing on monitoring and evaluating their own usage.

Summarizing the strategy:

In order to get a better overview of the ideal strategy I want to summarize it within this section. The strategy is based on the autonomy learning strategies identified on page 27. In order to get a quick overview of the strategies designed to help foster sustained usage of e-learning tools through autonomy learning strategies I want to highlight them through bullet points:

- A better (and continuous) bandwidth and infrastructure of the university is needed in order to uphold a constant quality of the internet, and thus not having constant downtime and interruptions when using e-learning tools.
- Find out what tools would be most appropriate for the students to use through observing their use of other tools in academics. Also gathering log data to register which tools they use already (if they use any). This information will serve as the baseline for what tools is appropriate for the students to learn how to master. The tools will be tools they need (actually find useful) instead of what they want (perhaps to only use the same tools as their western partners). This caters to their own interests.
- Incorporating e-learning into the curriculum of the university. This is first and foremost done by using Moodle. Moodle can be setup to function in regards to the needs of the university and have a wide variety of tools incorporated.
- Educating staff members/teachers and the IT department on using Moodle and to serve as superusers.
- A workshop should be held by Western partners in order to teach the tools identified in the research of users needs. The workshop will consist of four different phases created in order to foster autonomous learning within the participants. The participants will be teachers and staff members of the Southern university so they can incorporate the tools into their own teaching. The workshops phases is made in relation to exploring, rehearsing, evaluating and monitoring. It is designed as to make the participants continue in using the tools in the future together with reflecting upon their own usage of the tools.

This summarizes the ideal strategy. In the next section I want to discuss how a more tangible strategy can be formed which takes economy into consideration. This ideal strategy will serve as the baseline for the tangible strategy.

The tangible strategy:

I now want to discuss the strategy that has taken economy into the consideration. It is this strategy that could be used in praxis as it takes into account the lack of funds that usually is the problem within the South. In the beginning of the ideal strategy I discussed that it is necessary to uphold a good broadband connection. This costs money and divert economics from other, possibly more important places and is thus not tangible in the long run. Therefore this strategy will take into account the lack of a strong broadband connection. This will limit the tools that can be used (for example streaming, webcam conferences etc. will be almost impossible) which is also an important consideration in relation to what tools can be used to sustain e-learning usage within the Southern universities. The economic overview I will present within this chapter is built upon the data from the MAGAART case (an overview of the money used in the MAGAART initiative can be seen on page 40). This strategy will be based on the ideal strategy and modified in ways that is economically viable.

First and foremost it will not be possible to sustain a strong broadband connection in the Southern universities as of this date. This means that not every tool can be used. This factor is worth considering when choosing what tools might be used long term by the universities. Many of the strategies found within the ideal strategy guide are very useful and will thus be modified to fit within a low budget. I thus want to start out talking about Moodle. Moodle is in fact open source, and thus free to use. Therefore the only cost that could be associated with using Moodle is the cost of a server to keep it running on. This is a very cheap way of having a starting point for e-learning. It is a time investment as there is a need for an IT department to keep the server running and updating Moodle. As Moodle is a low cost LMS I thus propose it is used. Not only because of the economical advantages but also due to the (also previously discussed) customization that it provides. It is possible for the university to set it up in whatever way they found the most necessary and useful. Initially the West can be of great help setting up Moodle together with guiding and teaching the usage and the maintenance of the LMS. Since Moodle has been used before in the MAGAART case, the universities linked to the initiative will already have a basic understanding of how it works. Once again I wish to begin with discussing how it should be investigated what the users wants in regard to e-learning tools.

What the users want:

In the ideal strategy one of the proposed ways of gathering information on what tools could be useful were to conduct an ethnographic investigation, observing what tools were used by students at the universities. In order to get a larger sample in this regards require a larger sum of man hours and payment for doing the work. Therefore this might not be as tangible, as it requires a large amount of time allocated to the observing part of the investigation. The idea of observing what tools is used seem to be a good non-biased method and would be useful in a more tangible assembled way. Therefore I propose that instead of observing a large amount of students at the university, the focus is directed towards teachers and staff members instead. This demography might already have preferences within using e-learning tools and already have a knowledge of some. Although by observing teachers and staffs can be beneficial because the sample group is smaller (and more tangible) and the tools discovered from investigating the teachers and staffs would most likely be beneficial for students to learn how to use too. Therefore the observation study is minimized to teachers and staffs only with a chosen sample in relation to how big or small the university (and their budget) is.

The other way of collecting data regarding what tools could be useful to teach the Southern universities how to use were through logging data. This method is very cheap and thus highly advisable. Combining these two methods provides a cheap way of identifying what tools the Southern universities are already using (both students, through logging data, and staff and teachers, through logging data and the observation). The process is similar to the one pointed out in the ideal strategy, and the results will be used in the same fashion; to understand what tools would be advisable to teach the students and staff of the Southern universities how to use. This way should ensure a sustained use since the tools would be built upon the need of the users.

Teaching and learning in relation to the tools:

With the list of tools that could be useful and beneficial for the students and staffs at the Southern university completed it is necessary to understand what to use it for. In the ideal strategy workshops were created to teach the staff members and teachers how to use said tools, focusing on creating super users in different areas. A university could have 100’s of staff members and teachers in which this process would be expensive. Therefore it might not be tangible (or even possible) to educate every single staff member and teacher. An economic viable solution is thus to educate a smaller sum of teachers and staff members (possibly from different faculties). It should be noted that in relation to Moodle it is important that the IT department is fully trained and capable of updating and running Moodle.

I thus propose that a couple of people from each faculty from the chosen university will be trained into being super user. From this point onwards these super users can be used by the university in order to train the rest of the staff and teachers if necessary without assistance from the West. Initially this handful of teachers and staff members will be needing training from the West and I thus propose a workshop is held. In order to minimize costs this should be done online. A way of making this possible is through video conferencing. In order to make this a possibility the Southern university will need to allocate money towards boosting the broadband connection for the period of the video conferencing. It should be noted that this will be cheaper than having Western professors flying around the world (and needing accommodation) and are thus more tangible. This online-held workshop would follow the same standard as the one in the ideal strategy. The teaching phase will involve a (or several) teachers placed in the West explaining how the chosen tools work. The exploration phase leaves the users to try the tools amongst themselves all along asking questions if needed (a rapporteur will be needed within the Southern university). At the rehearsal stage some participants are chosen to explain to the rest how the tools work, and finally the evaluating and monitoring phase is done online. It leaves a responsibility on the Western universities to give feedback on this however. Through the online training it should be possible to produce a handful of super users within each faculty who amongst themselves can pass on the torch in relation to the knowledge they harbor regarding the tools.

Economy:

Finishing off I want to discuss the costs of this strategy. To do so I want to sum up the different elements that costs money:

- Investigation costs (having people observe what tools the teachers and staff members are using)
- Logging the data regarding tool use
- Having teachers in the West prepare an online workshop in relation to the tools identified as usable
- Having teachers in the West hold the online workshop
- Having teachers in the West evaluating on the participants afterwards
- Increasing the broadband connection for the duration of the workshop
- The cost of having Southern university staff and teachers attend the workshop
- Teaching the IT department how to operate and update Moodle

By having a look at the budgeting from the MAGAART case, the following numbers are of relevance:

Learning Infrastructure Support:	502.200
Coordination:	408.150
Research Methods and Methodology (PhD):	241.050
PhD Supervisor Forum:	133.100
Initial Workshop at TU:	360.740
Total:	1.645.240

It should be noted that these numbers covers work on a much larger scale than what is presented within this strategy. Therefore the price of doing the initiatives within this strategy will not be the same as the one in the MAGAART initiative. It will, for example, only be necessary to boost the infrastructure on the university the day the online workshop is supposed to happen. Taken into consideration that there might be 100s of employees at some of the universities this strategy will take an example of two workshops with 20 participants in each (and a rapporteur). Therefore two days with increased broadband connection will be necessary. This may require testing and setting up the workshop as well, and I thus estimate the price at around 5.000 DKK. The investigation method will be done by the South with guidance from the West. This is considered coordination. Although presenting and teaching the partner in the South how the data should be collected will cost man hours in both the South and the West. Some basic training might be needed for the observation study and help for the IT department in regards to setting up a logging system. I estimate the cost at around 20.000 DKK.

Coordination between the two universities (the ‘teaching’ university (the West) and the ‘learning’ university (the South)) requires man hours from both universities. This involves having a dialogue with the South in relation to the findings of the investigation, the material in order to teach participants about the tools, preparing the workshop and the aftermath. As this post is heavy in working hours it will be more expensive. I estimate a cost at around 40.000 DKK. This will cover preparing, attending/holding the workshop and the evaluation aftermath. In total it adds up to 65.000 DKK in budget.

Conclusion:

The best way of sustaining a continuous long-term use of e-learning within a Southern university starts by defining what e-learning tools that actually are relevant for them to use. This is done best through observational studies of what is currently being used (in regards to tools) and through logging data capturing the use of online tools (if there is any). It is necessary to evaluate the tools they will be using in relation to their broadband connection as it is of poor quality. Heavy data-driven tools is thus ill advised in order to gain a sustained use of the tools. Following in the footsteps of the MAGAART initiative it is important to teach the participants in the South how to use the tools. In a tangible matter this can be done online through webcam conferences. In the day(s) of the online webshop it is necessary to boost the broadband connection. Within the workshop teachers and staff will be taught how to use the tools that has been identified as the best choice. In relation to Moodle it is important for the IT department to be trained in sustaining it through updating it and handling support. Having Moodle as a tool from the university will serve as a starting point for e-learning among the rest of the students and teachers alike. This will serve as the strategy that will ensure a sustained use of e-learning within Southern universities.

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