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LEADING THE AI TRANSFORMATION IN EDUCATION

Analysis of Current Status in Finland and Opportunities in Near Future

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ASTRACT

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The thesis will demonstrate the use of AI in Education to provide better tools for educators, researchers, students and anyone who works in educational institutions. The thesis will also explore the potential uses for AI in Finland Higher education and Vocational Education. The thesis will also offer tools and guidance on what to consider when starting and leading the new journey in the schools.

Methods in this thesis include interviews, teaching in classrooms, feedback from workshops for schools on this topic and various books and research in this area. Also other methods used during the thesis.

The starting point was that there are many AI in Education activities, but they are driven by individuals rather than organizations. Some schools may have multiple activities, but they do not have a coherent plan or method for implementation. There are also some projects that span across Finland, but they do not reach all schools and the change is too rapid to delay. Often schools are unaware of what they can do with AI and how it can assist them in their daily work.

Most of the institutions did not have a definite plan or approach for adapting their organizational culture and skills to change. This is a problem that many organizations have discussed, but they have not solved it yet. There is no clear plan, how will they integrate the cultural change into this AI Transformation.

AI users vary in how they use it and many of them lack any training. Sometimes there are multiple ways to use tools and this can perplex some users. We still hear views that AI should not be used in Education, while many of the tools we use daily already depend on AI.

Key words Education, generative AI, GPT

CONTENTS

ABSTRACT

1 INTRODUCTION 5
2 AI HAS CHANGED THE EXPECTATIONS AT WORK AND SCHOOLS 6
3 WHAT IS AI TRANSFORMATION 7
3.1 Generative AI 8
3.2 New Skills 8
3.3 Change in the Way We Work 9
4 HOW TO USE GENERATIVE AI GENERALY 11
4.1 Content Creation 11
4.2 Code Creation 11
4.2.1 Image Recognition and Generation 12
4.3 Summarization and Advanced Search 12
4.4 Question 12
4.5 AI PRINCIPLES 13
4.6 Data ownership in AI generated content 13
4.6.1 Data 14
5 AI IN EDUCATION 15
5.1 Challenges in AI transformation 15
6 THESIS THEORY AND ASSUMPTIONS IN MORE DETAILS 17
6.1 Possibilities 17
6.2 Strategy 18
6.3 Reason for the change 18
6.4 Exiting Project and Guidance 19
6.5 How to lead the change 20
7 THESIS QUESTION 22
7.1.1 Current Tools and Solutions in Education 22
7.1.2 Summary of Questions 23

7.1.3 Start of The Transformation 23
7.2 Interviews 24
7.2.1 Collecting Information for Thesis 24
7.2.2 Conclusions at the end 25
7.3 Analysing the Data 25
8 SUMMARY OF FINDINGS 27
8.1 Benefits of using the AI Tools in Education 28
8.2 How AI Transformation is seen in organizations 29
8.3 What are the challenges in AI Transformation 30
8.4 Leading the Transformation in Education institutions 31
8.5 Other considerations when planning the Change 33
8.6 Expectations from companies 34
9 CONCLUSIONS BASED ON THE INTERVIEWS 35
9.1 Strategy 35
9.2 Leading the Change 36
9.3 Use Of AI 37
9.4 Implementation of Training 38
9.5 Data 38
10 NEXT STEPS AND IDEAS 40
REFERENCES 41

1 INTRODUCTION

Almost 25 years ago, I began to work on Digitization of Education. My first project on digital learning was when I was part of a project called VIDA (Virtuaali Datanomi). The project aimed to explore new methods of teaching Vocational education and how to test remote education and eLearning in Finland Vocational Schools.

For the last 4 years, I have been working for Microsoft as an Education Industry Executive and an Account Executive. My main responsibility has been Higher Education and Vocational schools in Finland.

I have enjoyed seeing how digitalization in education has progressed rapidly in recent years; how Covid-19 altered the mode of work and instruction. The pace of education digital transformation was quicker than ever before. Practices that were impossible before became normal for many schools. It also opened up various new ways to make education more attainable than before.

Digital tools have introduced various new ways to enhance the learning and make it more individualized than before. The tools have also made the use of digitalization in education more practical, and they are now widely adopted. There is still room for improvement, but now it is time to create new methods with new tools.

My main focus this year has been on AI opportunities in Education. AI has developed rapidly and I have noticed that there should also be attention on guiding the change. This thesis I will present results from the field and contrast different methods to guide the change.

Many teachers and researchers have demonstrated excellent uses of AI, but these are often isolated cases. Most of the organizations have not yet implemented a central and coherent strategy and vision for AI in Education.

2 AI HAS CHANGED THE EXPECTATIONS AT WORK AND SCHOOLS

This thesis will mainly focus on Generative AI and how it has influenced learning and teaching methods in higher education and vocational schools in Finland. There are also several examples of other AI solutions and machine learning tools that have been in use for many years.

A few times a year, Microsoft releases “Work Trend Index” reports (Microsoft, Work Trend Index, 2023), and in May 2023 they issued a report called “Will Ai Fix Work”. This report is based on the responses of 31000 people from 31 countries. Therefore, this provides a broad view of the current expectations for work.

This recent research has found major challenges for productivity. These are also challenges for AI Transformation. For instance, not having clear goals and difficulty in accessing the information that is required can also hinder the AI Transformation in Schools (Microsoft, Work Trend Index, 2023). AI could also assist on many areas, so when used properly and regularly AI could help to tackle the same challenges.

3 WHAT IS AI TRANSFORMATION

The meaning of AI transformation in this thesis and possible implications for educational institutes are presented in this chapter. The transformation might have different meanings for others, and it is good to comprehend the transformation in this context.

This term can be understood in different ways, and many have their own opinions about the topic. AI Transformation in Education can be defined as using some new services regularly in personal or professional life and getting value from them. These are also common in the organization and integrated with the culture and processes of the organization. This does not mean that the organization has only adopted some AI tools in some areas and this is not part of the culture. Also, this needs to align with the organization's strategy and vision. This definition is based on a combination of other definitions that I found in books about Change management and Transformation.

AI has been studied for over 60 years, but it has gained momentum in recent years. In 2023, new Generative AI has created enormous possibilities for AI applications in our daily lives.

In January, OpenAI's Chat GPT hit 100 million users in roughly two months, becoming the fastest growing application in the world (Reuters, 2023.) This is also evident in education. At first, there were questions how to stop AI in Schools, but now most of the conversations are about how to use AI in Education and how to benefit from the new opportunities.

ChatGPT is a common topic in schools when they talk about AI in Education, even though it is not the only AI service and schools already use several other AI tools too. Generative AI has raised the awareness of AI potential and is now accessible for everyone to use.

This thesis primarily focuses on Generative AI and its potential, but other areas of AI are also discussed if they are relevant to the interviews. AI has been used in education before, but now it is accessible to everyone, so it is easy to use and create solutions with it.

Many of the AI tools use Cloud Services, so they can be accessed from any location and device. It also allows them to have sufficient resources for the service. Now there are also services that can link to organizations' own data and enable hybrid solutions. This thesis was also checked for grammar with AI Tools.

The Finnish Government made some new recommendations for cloud services this year (Valtiovarainministeriö, 2023). They recommend choosing Cloud as a main option when creating new services. Ficom also supports using cloud services in the public sector for security and scalability reasons(Ficom, 2023).

In February 2023, Microsoft CEO Sataya Nadella declared that this is an ideal time to rethink education and how technology can help that change. (Microsoft, 2023c)) Finland has also launched many new projects in this area. During the Covid times 2020-2022, there were several enhancements on remote and hybrid modes of working, learning, teaching and research and now AI is speeding up this process.

3.1 Generative AI

Generative AI has created many new possibilities for organizations this year. In the past, organizations had to train the AI models, but now with improved AI models you need to pay more attention to the prompts, how you query the tool. This might be difficult for some of the users, because using AI services is different from using conventional search engines.

3.2 New Skills

AI also demands new skills from everyone. According to the Microsoft Work Trend index, everyone needs to learn how to interpret the outcomes and adjust their

way of using the services (Microsoft, 2023b) . In this thesis I presume that the new skills are not always taught in schools, but this is up to each individual to learn. Sometimes these might be part of the learning, but often teachers and students have to figure out these by themselves. For instance, I have been in some classes where teachers suggest to use AI for the study, but they do not give guidance on how to use it and how to analyse and apply the data.

Figure 1. New skills needed(Microsoft,2003b)

3.3 Change in the Way We Work

Along with the AI, the Covid-19 pandemic has transformed how many workplaces operate. Around the world, more people are working remotely with different methods than before Covid-19.

The way people work has changed a lot since 2019. Many people now work remotely instead of in an office or a particular location. Work also has different options, not everyone wants full time or permanent work. Work can come from several small tasks, or only work for some months of the year (Schwartz & Riss, 2021).

This also affects how people learn. Students search for AI information on the internet because often AI and new topics are taught with a delay of a few years (Schwartz & Riss, 2021). This also means that everyone has to be open to change

and willing to learn new ways of working. Not everyone is ready for that, so there may be different modes of work and learning, if there is no clear guidance and support for change. This is also an assumption for this thesis, that the strategy and vision are not yet clear.

In this thesis we follow the same assumption as Schwartz and Riss (2021)made in their book *Work Disrupted: Opportunity, Resilience, and Growth in the Accelerated Future of Work*. Often course plans were designed years ago, and Generative AI was not available then, so it is not included in most of the course plans. This may change soon, and in the near future there could be more AI courses in all education.

To make people see the need and the benefits of change, and to help them learn, strategy and vision are essential. This would assist anyone who wants to participate in the change process. Organizations should also recognize that some people have a fixed mindset, and this strategy should cater to everyone, thus, supporting both growth and fixed mindset (Dweck, 2020).

The pandemic transformed how we work, and AI will have a fast impact. Legal and regulatory changes are lagging behind, and this limits some opportunities in certain domains (Schwartz & Riss, 2021).

4 HOW TO USE GENERATIVE AI GENERALY

There are different types of generative AI and some of the potential applications are listed below. Some examples of new generative AI applications are also provided. Many organizations are already using these technologies, and most of them are also accessible for schools to use.

4.1 Content Creation

One of the typical applications of Generative AI is to create chatbot systems. For instance, ChatGPT can generate responses based on the questions that are asked. Microsoft also introduced several new tools and new AI features to their solutions this year. For example, Big Chat Enterprise, now called Copilot, uses ChatGPT, and your data will be protected on the solution.

Microsoft has also introduced a series of Copilots, which are AI based tools that help you with your everyday tasks and let you generate your own content from your data and public data. Later in this Thesis I explain more how these can be used in Education.

4.2 Code Creation

It was harder to create new solutions in the past. Nowadays it is possible to tell AI what is required from it and AI can generate an solution based on the description. Microsoft released Copilot for GitHub earlier and now up to 92% of developers say that they use AI for Code Creation (Vaughan-Nichols, n.d.). Year 2021 only 30% of code was created by AI Support (Coberly, 2021)

Code Creation is a common aspect of developing solutions and AI can be used to enhance the existing code. AI can also annotate your code, so it is easier to modify later, and comprehend the logic behind the code.

This also affects developers' wellness, code quality and development time. AI can concentrate on the problem and system thinking instead of writing every line of the code..

4.2.1 Image Recognition and Generation

AI can be used to create images based on description and it can also be used to recognize objects in pictures. These can be used many ways in Education institutes.

For instance, it is possible to snap a photo of your fridge and ask what kind of dishes you can make from the ingredients that are there. It is also possible to tell the AI what kind of image it should show, and the AI will generate the image based on the description.

4.3 Summarization and Advanced Search

AI can help to condense large amounts of data or meetings that might have been missed. If you couldn't attend a meeting and your organization uses Microsoft Teams Premium features, user can access the meeting recording and find out what was talked about and decided in the meeting. All meeting summaries are made by AI.

4.4 Question

Many of us use this Question feature of AI every day, sometimes without realizing it. Many customer Services have switched to AI based Question Bots. There are also various services for Students that have AI support.

It is also possible use Bing Chat Enterprise, which is now called Copilot, every day when search for data and want to learn more about the information. This is different from the usual search engine, because it can combine the answers for you from various sources and you do not have to search the information from different places.

4.5 AI PRINCIPLES

As AI becomes more accessible to everyone, it is also essential to pay attention to the AI Principles that everyone should adhere to. Microsoft has shared their own AI Principles which explain how AI should be applied.

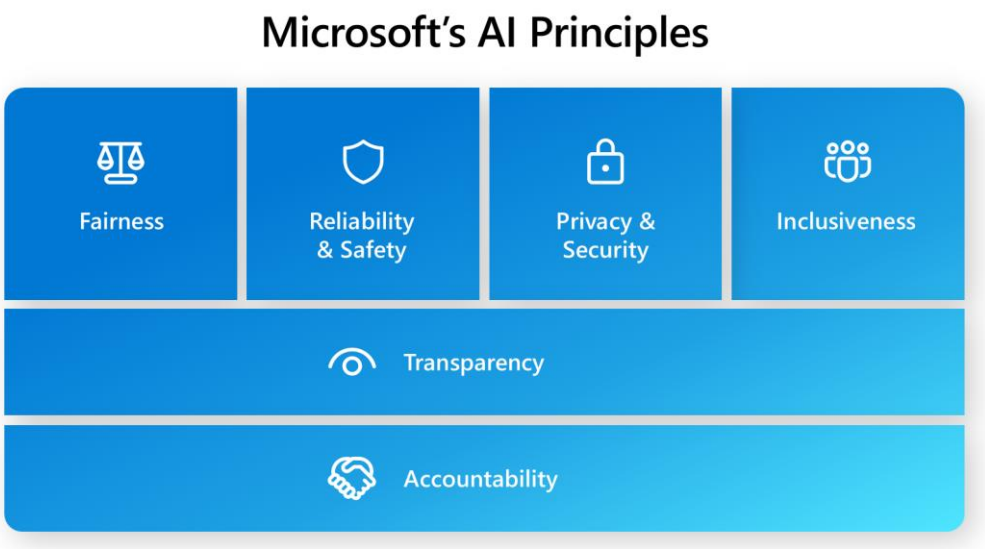

Figure 2. Microsoft´s AI Principles(Microsoft,2023a)

AI can bring up some issues about how to use AI or protect it, and these main principles help Microsoft concentrate on the AI creation and AI application. I receive questions almost every day about how secure and dependable the AI is.

4.6 Data ownership in AI generated content

One should keep in mind that AI does not always provide accurate data and it relies on various sources for data generation. Often AI also displays the source of the answer, but it may "imagine" and add its own ideas into the material, so one should be aware of how to use the answers. This is also important to teach to the students, so they learn to use AI appropriately.

By using your own solutions, you can control the hallucination and also you can specify where the answers come from. Schools should assess how to use the AI Solutions that suit their needs and security requirements best.

4.6.1 Data

Data is the basis of AI's answers. And AI can only answer based on the information that it can access. When using AI solutions, it is important to ensure that Data is valid and has good quality. Without data, there will be no answers, and with insufficient or inaccurate data, the solutions will not be good.

5 AI IN EDUCATION

AI has changed Education a lot this year and there are many new ways to apply it. Things are very different from last year and the changes are fast. AI also helps other organizations outside of Education to innovate faster. Schools and Universities need to keep up with these questions from organizations and prepare students for the future of work.

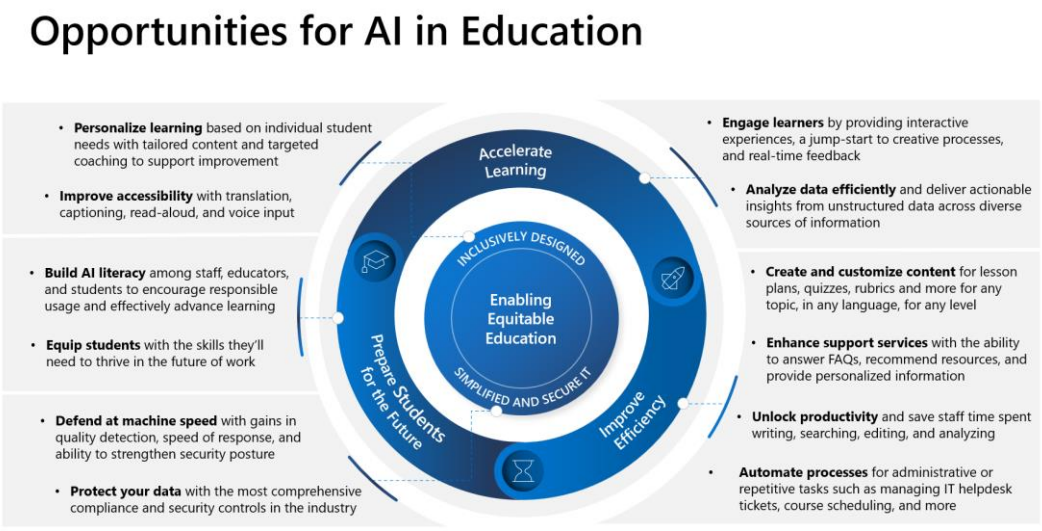

Figure 3. Opportunities for AI in education (Microsoft customer presentations)

Figure 3 shows a few of the possibilities. Every week I learn about new ideas how AI is being used in Education, and new opportunities are constantly emerging. This pace of innovation also causes some users to feel anxious, because they have to keep learning and relearning new ways of working and teaching. The picture is from Microsoft Education Presentations for the customers.

5.1 Challenges in AI transformation

Education has many possibilities, but also some difficulties when designing the execution. These are also premises for the thesis. Some of these were mentioned in previous chapters as well.

The information is spread out and in different places. It can be hard to find the current information about the options and tools that are available.

There are not many AI solutions that are made in Finland, so getting help from other organizations when developing the use cases is difficult. There are many use cases around the world, but they are hard to find.

With so many tools and AI buzz, it can be hard to find the best solution for your purpose. Also, with so many tools available, you need to think about which ones are feasible and supported by organizations. When you choose the right tool, you should not only look at your own personal demand, but also consider others, and how secure and safe the solution is.

Tools are constantly changing and often users are not familiar with even the old features of the solutions. Change may require time from users and if they do not see the value of the solution and it adds more work, it can also affect the wellbeing of users(Kinnunen & Rytisalo, 2023).

Schools should aim to automate processes and enhance the use of services with AI transformation. They should not choose tools only based on their AI features, but also consider the value and benefit of the tools.

6 THESIS THEORY AND ASSUMPTIONS IN MORE DETAILS

When I began writing this thesis, I had some hypotheses about the present situation and how AI is used in Education. In this study, I will examine these hypotheses and confirm what is the actual state in the institutions based on surveys, meetings and interviews. Some of the data is also gathered in events where I have shown the AI tools for Education.

I have already addressed some assumptions earlier in this thesis, but here are some more topics that this study will explore. This topic is so novel, that there is still a lot of work to do within organizations.

6.1 Possibilities

I will examine how schools and other organizations perceive the AI capabilities and whether they have a clear understanding of what is now feasible and how to explore the opportunities. There are still few studies of AI benefit and use cases in Education, so many schools need to create the possibilities by themselves.

Schools should also think about how to apply tools in education and pedagogical outcomes and advantages and there is still not much research done on Generative AI opportunities in Classrooms. Testing should also have a clear purpose, why these tools are worth considering in the schools.

Students tend to adopt new tools quicker than employees and this is evident in schools, where students use the tools before employees do. Schools are not instructing the students on how to use the tools, but they are permitting them to use the tools for learning.

We also see a lot of opportunities in Research area, but we think that some researchers may not be aware of the features and how to begin using them. Sometimes instructions and guidance are based on conventional tools and on-premise solutions with AI Tools that require more skills than the new solutions.

Tools change fast, and the assumption is that schools do not have clear ways of sharing this with others, or with other schools. Usually, the user has to look for the most relevant information from different sources. There are also no clear instructions on how to get help for the innovation process or how to ask for new services.

6.2 Strategy

The study will also examine whether there is a deliberate plan for this transformation or whether it is mainly motivated by user preferences. We expect that most schools do not have a clear AI strategy, and if they do, it is not finalized or communicated well to users. There might be some advice on what tools to use and how, but a clear vision and goal are lacking.

This should also cover the strategy of how to involve the entire organization in the change. This is also a cultural shift and should not be motivated by the demand for new tools.

6.3 Reason for the change

The premise of the study was that users have different perspectives on the necessity of the change, and that there are various factors that make users think that this change is required. There are still users who do not perceive the need for change and are resisting it.

At the BETT fair in London in spring 2023, many teachers asked me how they can stop the Generative AI in Classrooms. I still get some of these questions this fall, but not as much as in the spring.

If this change is not managed well and users do not see its benefits, it might be perceived as an additional burden. Teachers already have many initiatives to deal with and if the change does not support their work, it might also affect their well-being (Kinnunen & Rytisalo, 2023)

Strategy and vision could show users the opportunities and the potential scenarios for the future. This change is not a one-time event, but a continuous process for the near future.

The assumption was that there might be different perspectives on what AI is and how it is already used in the School, even within the same school. Also, each user has their own opinion on whether change is necessary, or not.

6.4 Exiting Project and Guidance

There are also some programs and projects from the Finland government that support this change. For instance, Opetus- ja kulttuuriministeriö (Ministry of Education and Culture) has published Policies for the Digitalization of education and training until 2027 (Kulttuuriministeriö, 2023). This program shows how digitalization can help the individual learner.

Additionally, there is a digitalization Framework that relates to some projects in this area, but it is not followed by all schools. (Koskiniemi, 2024) and this mainly targets students in pre-schools and elementary schools.

Digivisio2030 is a project by Higher Education institutes that aims to envision the future of learning and how to access education from different universities, but it does not address the role of AI in Education at the moment. (Digivisio2030, 2023)

CSC website has a joint roadmap for future projects with Higher Education institutes, but it does not include AI in Education yet. (CSC, n.d.) Several projects on that roadmap could benefit from AI.

From these programs I infer that Finland does not have any joint AI in Education programs and this will be confirmed during the thesis interviews. There may be some other programs that involve multiple organizations and this is also what we aim to find out during our interviews.

Regarding research area, there are limited number of Universities that are exchanging their ideas with others, but this does not cover all schools and the main focus is on IT Services. Schools also disclose their projects to each other when requested.

6.5 How to lead the change

Prior to the study, the assumption was that there could be different ways to lead the change. Often, change is not initiated by the whole organization, but by individual motivation for new opportunities and personal growth mindset (Dweck, 2020).

Users do not have any systematic way to access trainings or awareness. Transformation is a topic that attracts many, but often users need to find the information on their own and not through some program designed to help them learn.

I have organised several events in Finland and I think that there have been almost 1000 people who have attended them this fall. These were not part of any program, but events that I set up independently from the school programs.

Different schools may have different ways of implementing and leading the change. Jim Collins (2010) in his book *Good to Great* also suggested that when planning the change, persons involved in the project should be identified and who are not, as well as those responsible for the change . You should also make a list of things that you should stop doing . This means that it is good to think about if you introduce new processes to teaching or research, you should also know how to eliminate the old way of doing.

It is also unclear how to collect the ideas from users for the benefit of other users. Users should have the freedom to experiment and explore new possibilities and then communicate them to others, and new technology should not only be applied

to old methods, but should be used for creating new ways to enhance the work or study(Schwartz & Riss, 2021).

7 THESIS QUESTION

The same questions will be used for most of the interviews and they will mostly take place on Teams. The interviews will also be recorded and Teams will create a transcript for the meetings.

The questions are designed to test the assumptions and Theory, and to check the progress of AI Transformation in Finland Education. Some questions will vary depending on who is interviewed.

We will interview different people who have various roles and their knowledge of AI Transformation should give a clear view of the current situation. This will not include all organizations in Finland, but we aim to have a good understanding of the situation, based on multiple organizations.

I will also interview Microsoft Western Europe Education lead and Microsoft Education Product Group. These interviews have a different format, because they help us learn how AI is applied in other countries and how Microsoft intends to offer new capabilities to Education users.

7.1.1 Current Tools and Solutions in Education

This thesis will present some of the tools and solutions that are currently used in Finland for education. It will not cover all of them, but it will show how complex the environments are.

In the last 3 years, I have attended 6 schools and each of them has their own solutions and tools, and even within the same schools, different teachers may use different solutions. The same tools can also be applied in various ways.

7.1.2 Summary of Questions

Questions helps us to understand what AI tools are already being used and why they are useful. Questions also helps us understand how users perceive the AI tools. Many of the tools have AI features, but with this question we can learn more about the users' perspective.

Questions will help to clarify how the change is perceived. Discussions also clarify if it is a change in teaching methods or in technology?

Thesis will also clarify ho do the users and institution leaders anticipate this change, and what kind of benefit we should expect from transformation. Different people might have different expectations depending on their perspectives. What we need to do immediately and what can be postponed.

Interviews will also demonstrate how to involve the relevant people in the transformation and how to ensure their participation throughout the process. Who should take charge of the change and whether we can or should engage everyone in the project.

Before we can begin the change, we also need to address any questions that may arise from the change. This also assumed that every user had their own perspective on why this change was necessary.

7.1.3 Start of The Transformation

When transformation starts we need to define what is the timeline for the change and when will we see the benefits of the change, and how can we show the value to everyone. Is change happening now or is it in the future?

We need also clarify how can we achieve this AI Transformation. What are the existing tools and best practices, and what outcomes do we expect from this change? What kind of support and resources do we have already? Is this a project or a regular part of our work?

Project should also focus on the consequences of not leading this change together? The premise is that some people are left out of the change, and how users perceive their role in the change.

What are the prevailing beliefs about this change leader. Are there any established frameworks for guiding the transition in organizations already.

7.2 Interviews

Interviews were mostly done one to one, but some were also groups. Participants come from different organizations and had various roles. Some organizations hadmore than one participant, so it was helpful to see if the users from the same organization share the same view of the options.

I interviewed 14 people from different schools and other public education institutions, such as the Ministry of Education. I also had chances to discuss this topic with several people at various events.

Some Roles that were interviewed: School Leaders, Policy Makers, Professors, Teachers, IT-experts and other Teachers and Digitalization Directors. Including various roles should help to understand the change from different perspectives.

Interviews also include K-12, Vocational schools and Higher Education institutions, so we can compare the organizations. Most of the Education institutions I also have interviewed at least 2 different peopleThe language of most of the interviews was Finnish, but some were conducted in English.

7.2.1 Collecting Information for Thesis

Organized several events for Teachers and educational organisations in Finland and for global audiences. Some of the insights are based on these events. These events have mainly focused on “AI opportunities in Education”.

Some topics are also based on the current research and books. Mostly eBooks have been used for this thesis. Books will address Change Management process, Digital Transformation, Service Desings, Project Management and many other areas.

7.2.2 Conclusions at the end

Thesis present the current status and give recommendations for future actions based on the findings. Thesis will also compare the findings to the theory. There may be some useful examples from the interviews as well.

To create summary and proposal for next steps, Thesis applied these tools and methods: PROSCI (Change Management), Agile, and other Change Management practices. These are effective frameworks for managing and leading the change.

7.3 Analysing the Data

All individual interviews were conducted by Teams using the Copilot and Transcript features. All transcripts were about 1000 pages total. Most of the interviews were in finish, but AI tools can translate all to English for this analysis.

Manual summarization of this data is not very easy, so all data is stored in Data Storage and Azure AI Seach engine is used to Index the data. This data will be secured on Azure environment.

Azure+OpenAi engine with Chat GPT 3.5 Turbo and GPT-4 was used for analysis. Data was Indexed with Ada 2 models and applied vector search to improve the answers' quality. For analysis purposes Azure Open AI Studio was used. This made it easy to ask questions about the interviews.

Other models could have also worked, but for this analysis best fit models were GPT- models. They can process the data fast and give precise answer.

The solution was not deployed as a web-app, but only accessed through the AI Studio. One could also develop their own application for this kind of analysis, but that would not have added any value for the thesis.

8 SUMMARY OF FINDINGS

Interviews gave a good understanding of how AI Transformation is proceeding in Finland Education institutions currently. Some of the assumptions were correct, but there were also many unexpected findings.

AI tools in education have various implications that need to be thoughtfully examined. Firstly, it is essential to tackle the issues and prospects related to AI in teaching and learning, such as ethical principles, data protection, and the improvement of digital skills.

Next, the level of AI uptake and knowledge in various educational segments and stages, such as schools, universities, and continuing education, should be considered. Each group of institutions may have their own needs.

The AI in education's future vision, such as customized and inventive learning, and the need to weigh human and machine intelligence, should also be taken into account. These are advancing quickly, and there are always new methods to benefit from the tools.

It is very important for leaders and collaborators to help with the AI transformation, by giving resources, training, and support to staff and students. In many places, we could not see the leadership role so clearly.

Interviews of policy makers and organizations that work with education institutions gave better view of why this AI Transformation is important and why it might take longer than in some other industries. The conversations with the policy makers were excellent, and they gave useful insights into the future of AI in Education as well.

The AI transformation is necessary to help a new generation of people to use the existing technology to achieve their highest potential and effectiveness. People

need to acquire new skills and enhance their capabilities to better adapt to the future demands.

This also gives a chance for education systems to promote the good use of this technological option. However, it's important to weigh the possible risks and benefits of AI, and to find a balance between the potential of the technology and the ethical use of it.

The AI Transformation can also bring difficulties in education, such as achieving a balance between continuity and change at the curriculum level, incorporating AI into the curriculum, and fostering new skills and ethical sensitivity for teachers and students. These factors emphasize the need to comprehend and handle the AI Change in Education.

AI can also support education by making it easier to access and combine information, but it needs thoughtful evaluation and analysis to guarantee the reliability of the result.

8.1 Benefits of using the AI Tools in Education

People had different thoughts and opinions about the advantages of AI in education. Some of the main and common themes of using AI in schools were to empower a new generation of people to use the existing technology to optimize their productivity and influence.

AI can also reduce time, improve learning, expand teaching, and demand new skills and ethical sensitivity for teachers, students, and experts. Moreover, AI can customize and innovate learning, and it can harmonize human and machine intelligence. These advantages show the possibility for AI to transform education and enhance the learning experience for students and educators alike.

Some other benefits also emerged, and some of them were related to the field of education and the age of students. Most of the interviews highlighted only positive changes, and did not concentrate on the challenges.

We talked about how AI can help the research and the advantages of using AI in research are developing new abilities, speeding up the process of turning information into knowledge, and making new interfaces. AI can reduce time, improve learning, boost teaching, and demand new skills and ethical understanding for different roles in the education sector. We can notice that some of the benefits on learning and research were similar.

Based on the interviews, we can also infer that some institutions have more advanced AI applications than other. All institutions employed AI in some domains, but others were still quite restricted on the usage.

They also talked about how each person should think about what the benefits are for them, as this would make the change faster. If a person knows the benefit, it will increase their interest in the change.

8.2 How AI Transformation is seen in organizations

The interviews indicated that the AI shift in Finland depends on both personal effort and organizational change initiatives. Individual plays a big part in how the AI will help them in their everyday work. Most of the institutions have direction on how to use AI in Organization, but not yet specific direction on what are the tools to use and how to use them.

There is a need for education systems to play a crucial role in mainstreaming the use of AI and ensuring that individuals are able to use generative AI in a productive way and also that individuals are ready for future of work. This involves teaching

individuals how to use AI effectively and refining the prompts when engaging with generative.

AI changes how schools operate, as it helps to build new skills, speed up the learning process, and introduce new ways of interaction.AI can enhance education by making it more effective and impactful, creating possibilities for change and progress. It is vital for education systems to adjust to new technology and promote analytical and creative thinking to equip students for the future.

8.3 What are the challenges in AI Transformation

Some of the challenges of AI change in education are finding a balance between stability and change in the curriculum, integrating AI into the curriculum, adapting to the impact of AI on assessment methods, and learning new skills to use AI tools effectively.

Moreover, there are difficulties associated with the access and development of technology in different organizations and countries, the demand for complete identity systems and cooperation platforms, and the possible drawbacks experienced by schools and countries with less advanced use of technology.

In addition, there are concerns about the possible misuse of AI, such as copying, quality, privacy, and the digital gap, which emphasize the need for curriculum and laws to change with new technology and for education systems to promote critical thinking and creativity.

When using AI tools in education, several aspects need to be thoughtfully considered. One of them is making sure that all students and teachers have devices with reliable connectivity and access to the tools.

It is important to offer training and support for staff and students to use AI tools and platforms for teaching and learning. Moreover, there is a need to find a balance between human and machine intelligence, as well as to build new skills and ethical sensitivity for educators and students when using AI in education.

In addition, you should think about, critical thinking and improvement of prompts are important when interacting with generative AI to guarantee the output's quality and dependability. These are new skills that users should learn.

Many organizations are also hindered by the lack of strategy and vision for the change. They have focused on things that can be done, but they do not have a clear vision in most cases.

EU is setting the rules for AI usage within the EU area, and then Finland will make their own suggestions based on the EU ones. After that, many schools will create their own suggestions based on that and finally the Teacher will also do their own adaptation of the suggestions. This will also take a long time before the changes become part of the culture and daily work.

8.4 Leading the Transformation in Education institutions

A mix of individuals and organizations at different levels leads the AI transformation in education. Transformation includes various actors from universities, schools, and industry, as well as groups, rules, and plans for AI implementation.

The change also needs a balance between stability and change at the curriculum level, incorporation of AI into the curriculum, and the acquisition of new skills and ethical sensitivity. This will not happen overnight, but it is already recognized as a vital step.

In addition to playing a critical role in mainstreaming AI, education systems can ensure that individuals are able to use generative AI in a productive way. There are many solutions available, but they are not yet used widely in organizations.

These efforts are aimed at mainstreaming AI knowledge and skills, refining prompts for generative AI, and fostering critical thinking when engaging with AI tools. The leadership and strategy for AI transformation involve various networks, projects, and events for collaboration and learning from other educational institutions. Overall, the AI transformation in education is a collaborative effort involving individuals, organizations, and educational systems to integrate AI into teaching and learning practices.

Many organizations still rely on interested individuals to implement new methods of teaching, learning and research. They have plans to do this at the organizational level, but they have not done it yet.

Some organization have internal networks where they share the best practices, but these networks do not cover all the employees, and some are left out. It has also been suggested that maybe, at first, only some users have to be involved in the change, and later when the Strategy and Vision are more clear, everyone should join the change. This would also imply that this is not part of the organization culture yet.

The interviews mainly focus on employees, and they provide little information for students and guidance for them on how to use the new tools. The main emphasis on students is on how to apply AI, not so much on what and which to use.

Institutions should also ensure that everyone has equal access and opportunity to use new AI Based tools, so that some people do not receive better services and quality than others. There may be some teachers who are using AI for all their teaching, while in the same education institution there are students who do not have the same opportunity. For example, if you learn how to create new applications with AI tools, and in the same school, another group is learning a similar topic without AI, there may be a difference in the skills learned within the same organization.

8.5 Other considerations when planning the Change

One should think about the difficulties that schools encounter when they adopt AI, such as achieving a balance between continuity and change at the curriculum level. You should also pay attention to the importance of guiding the AI change from an operational perspective, defining objectives for the use of AI, and thinking about how AI can fit into the organizational culture and dynamics. Many organizations still lack this operational perspective where they have clear goals and vision where they are heading.

Organizations may not be able to include everyone at once, but they need a clear plan, where they want the organization to be in near future, and how to manage the change and get everyone on board with it. How to adopt more of this growth mindset and be prepared for new opportunities (Dweck, 2020).

It is important for the organizations to share their best practices with each other, not just on Facebook groups or LinkedIn, which are the main platforms for sharing practices between organizations. In 2021, a survey of IT in higher education in Finland found that institutions should also increase the information sharing within the organization (Finland, n.d.). There are some networks that facilitate the information exchange among the Technology teams, but not all organizations participate in this.

Interviews also show the need for a comprehensive approach to engage all stakeholders in the AI Transformation in Finnish Education, covering curriculum incorporation, skill enhancement, operational management, and cultural assimilation. This has not been achieved yet.

Many interviews talked, how the curriculum should be updated according to the new opportunities, but pointed out how slow it is to change the curriculum. There are hundreds of curriculums in vocational schools and Higher Education institutions, and if they all need to be changed, it will take years to do this.

Organizations should think about whether they can access new opportunities more easily in their daily work, and weigh the advantages of using these new tools. Besides using the tools, they should also reflect on what and how to use them effectively. This also implies more support for users.

Many also expressed the worry that tools are changing now so quickly that it is hard to keep up with development, even if you are curious about AI possibilities, and change is even more challenging to those who are not so interested on the AI yet.

AI Transformation can increase the difficulties for schools that have less advanced use of technology, possibly creating a gap between the digital haves and have-nots.

8.6 Expectations from companies

AI Transformations is a desired outcome by the employers who recruit the students after they finish their studies. There is a high demand for AI Experts and a shortage of experts on AI and Data area in Finland. As company solutions keep changing, they also need new employees with skills to join them.

Data is essential for AI to function well, so besides AI experts, Data experts are also in demand. Many mentioned the phrase “data is the new oil” and this reflects the reality in many sectors. There is a lot of data that exists but is not utilized. If data is not processed and applied, it does not benefit businesses or schools. But if data is used well, it is very useful for everyone.

9 CONCLUSIONS BASED ON THE INTERVIEWS

After conducting interviews and meetings during the autumn of 2023, it is clear that AI transformation is quickly changing the way of working in many organizations and schools. The development of AI is so fast that schools have not yet had the chance to consider all possible benefits for the AI.

The interview questions were all open-ended, and the aim was to learn how AI is perceived in schools. Most of the interviewees only talked about GPT and Generative AI, and did not mention other possibilities that exist with other AI Service, or how they are used. Only a few brought up how AI is applied in daily work outside of schools or work.

The same problems came up repeatedly. For example, the lack of a clear strategy or a clear source of help or support. Often there was no obvious solution to these issues.

It was also surprising that only a few people brought up the lack of funding in schools or universities to use the new AI opportunities. Also, ICT departments prioritized safety and regulations more than other users in the interviews.

9.1 Strategy

The interviews mainly discussed strategy and vision. There are many initiatives in Finland and at the school level, but the strategy is either unfinished or unclear to most of the people.

Some said that there are instructions for what AI can do, but end users have to do the implementation. It was unclear what the situation will be in 1-2 years, and how we can engage everyone in the change.

They also said that maybe we should not all switch at the same time, that we could have only some users join first, but this would still need the leadership and strategy and vision for where we are going. We should not just use new opportunities

to do the same work differently, but we should also look for completely new ways of working (Schwartz & Riss, 2021).

9.2 Leading the Change

The change can be led in different ways nowadays. Often, the change is driven by people who are curious about the new work methods, and some organizations may have some initiatives, but not many places have a clear change plan or aim for changes.

This can also be positive, because it does not restrict the potential for innovation, but at the same time, there is only a limited way to communicate the results with wider audiences, so in many places users are developing similar solutions in different organizational units, and could gain from exchanging the ideas and enhancing them together.

Many schools have various AI events that are happening or planned, and they have information for a lot of users, but not all the users get to know about it. Some people said that even though a school has more than 1000 employees, usually the same 50 people attend the events.

The AI was also used for various projects and some schools or universities had a designated person in charge of AI, who gathered the use cases and needs from the users. This is a good way to get a better insight into the current situation.

We could relate this to the ADKAR model from PROCI and say that most universities are not paying attention to awareness and desire, and the following step is the knowledge and availability for the users. The schools should also move on to this step soon.

Regarding vision and strategy, there should also be a clear plan of how to begin and how to proceed in stages. Schwartz and Riss argued in Work Disrupted (2021)

that the best way to learn something new with new technology is to search online, not in schools Perhaps soon these topics will be taught in all schools.

9.3 Use Of AI

Generative AI has many applications in schools and universities, but they are not widely known. Only a few users are aware of the existing achievements, or the tools that they can use.

Many users expect someone to show them how to begin or what advantages the AI has for them. We should spark their curiosity so that they would also seek the answers and solution by themselves.

Many of the schools have already adopted Copilot (previously called Bing Chat Enterprise), but there are still some education institutions that do not permit this to be used at work. Those who are using it have several good examples of how it assists them in their daily work.

Some AI tools are not under central control or checked for their safety. The fast pace of change also leads to the need for new tools and innovations, which are adopted quickly without proper analysis. Many AI tools can be used with a browser and users are sharing even sensitive data without clear awareness of the consequences.

Generative AI tools are in high demand, and users are experimenting with various tools on their own. In the past, many schools had "shadow" IT issues, and some interviewees suggested that this pace of innovation could cause similar problems again.

9.4 Implementation of Training

The initial belief was that users do not have proper training, but the interviews revealed that there are many events for users organized, but perhaps not everyone is aware of them. Some universities have AI trainings and events every week, and they are open to all users.

Vocational schools had fewer events, but they still organized some. Based on interviews, vocational schools also had more strategic focus than some universities.

All users can access the trainings, but they might not join them because they do not think they are related to their work, or they have too much work to attend the trainings.

It would also be helpful to have more stories and use cases that could be communicated to others. Many people in the interviews wanted to know how other organizations do it. Using stories and examples to show change is often the best way to conduct trainings as well (Brown & Roberts, 2019)

9.5 Data

Many interviews also mentioned data quality. Schools and universities have various data sources, but the data is not always reliable. Users may use solutions differently and this may cause quality problems. For example, this autumn, I have talked about the course description data. The databases allow different ways to enter data and each teacher may describe the course differently. Also, the systems may not require information such as lesson times or locations, so some data is missing.

Accessing and using their own data would be useful for many purposes, but how to do this in schools is still unclear. Therefore, trainings are needed for data access and use.

By learning how to apply new solutions and enhancing the skills of the development teams, Finnish educational institutions could accelerate their innovations. This pace is also necessary to meet the expectations of the companies.

10 NEXT STEPS AND IDEAS

Some examples show how to achieve the AI transformation, but from the interviews it seems that there are some opportunities to speed up the change and get quicker benefits.

1. Schools and universities could consider what they aim to achieve with the AI tools. Based on that, they could develop a high-level strategy and plan that management would oversee.
2. Innovations should be shared internally and externally with others in their own institutions and other organizations. This should be done simply and easily, not too complicated. They should also accept mistakes and challenges; not all experiments are successful, but they should also share the cases that did not work well.
3. It would be good to have someone who can lead and monitor the AI transformation across the whole organisation. There may be some barriers between different parts of the organization, and it would be good to share information across them as well.
4. Focus on awareness and training. There are already many tools and use cases available for all users, we should start using them and gain better understanding of what adds value to users. Adopting new ways of working could be done in an agile way, with small incremental steps towards the goal.
5. Focus also on developing skills for creating applications, and see how services can be made quickly for users based on their needs, with low code solutions or other solutions. This is also important for research projects.

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