

# Research method as learning method – students’ and teacher’s perspectives

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**Abstract—** Research full paper: The Norwegian government encourages higher education institutions to improve education when it comes to active learning, and in their programme for student-active learning, involving students in research is one of the specified areas of interest. This project is an action research approach to improve research-like learning methods in a higher education course. The paper presents experiences from using a research method as a learning method, more specifically using a systematic literature review to learn about the research method game analysis. The findings show that the students are active and engaged when using a research method as a learning method, but that the learning outcome is rather on the learning method than the primary learning objective. A systematic literature review also works as a learning method because it is well-defined with specified steps of action, which works as scaffolding in a learning process. The teachers’ role is important when involving students in parts of a research process, and it is important to consider which stages of the research process the teacher should prepare and in which stages to involve the students. The study also revealed that there is a need for a better definition of game analysis as a research method, with clearly defined “how to”-guidelines for inexperienced researchers and students doing a bachelor project or master project, which can allow inexperienced game development students to also use game analysis as a research method.

**Keywords—**research-based education, student-active learning, systematic literature review, game analysis

## I. RESEARCH-BASED EDUCATION

It is decided by law that Norwegian higher education should be research-based. A Norwegian teacher survey [1] concludes that the teachers of higher education use knowledge from recent research in their teaching and that the curriculum is updated and adapted to the development in society and working life, but that the students are less exposed to research-like working methods and even less participate in research and development. Griffiths [2] analyzed teaching in higher education and defined 4 models linking research and teaching: (1) Research-led teaching, in which the curriculum consists of existing research. Increased understanding of research findings is emphasized, not focusing on the research processes. (2) Research-oriented teaching, focusing on understanding the research process behind the presented research findings. (3) Research-based teaching, in which the curriculum is developed around inquiry-based learning activities. (4) Research-informed teaching, where one consciously draws on systematic inquiry into the teaching and the learning process itself.

Fung [3] takes the term "research-based teaching" further through the "Connected curriculum framework". In her framework for research-based teaching, she focuses on learning through research, and defines six dimensions. The first dimension describes the link between students and researchers / research at the institution. The second dimension is about research being built into all study programs, while the

third is about students make connections across subjects and out to the world (interdisciplinarity). Linking academic learning with skills for the workplace is the fourth dimension, while the fifth dimension defines the student as a producer, and the assessment basis is made for an audience. The sixth dimension deals with human relations and whether students are invited into inclusive research and learning environments, and students connect with each other, across phases and with alumni. The results from the teacher survey [1] show that we have a long way to go in Norway before we conduct research-based teaching according to Fung’s framework “Connected curriculum”.

"Research as a learning method" is a broad concept and may involve focusing on e.g. the use of both quantitative and qualitative methods, on student projects and large international research projects, on students who on their own carry out a research project [4], and students who participate in parts of a research project. This paper presents the students’ and teacher’s experiences with a pilot in an undergraduate IT course at university level where students used one research method (systematic literature review) to learn about another research method (game analysis). The goal was to actively involve students into some phases of a research process, as opposed to a bachelor thesis or master thesis, where the student is expected to go through all phases of a research process.

### A. Systematic literature review

To get an overview of the research field, a systematic literature review can be a useful method. According to Khan et al [5], a literature review deserves to be called systematic if it is based on clearly formulated questions, identifies relevant studies, assesses the quality of studies, and summarizes evidence using explicit methodology. Several studies present methodology for conducting a systematic literature review, often consisting of 3-5 steps or stages [5, 6, 7, 8] with similar activities. Badger et al [6] summarizes the process by 4 stages: (1) Defining the problem, as well as inclusion and exclusion criteria, (2) Search strategy, (3) Criteria for the evaluation of studies, and (4) Data extraction. This study used Khan et al’s [5] 5 steps for systematic literature review as it was considered to fit a classroom teaching and learning process best by structuring the work into steps which made it clear what was pre-activities, activities in the classroom and post-activities. In step 1 "Framing questions for a review", issues should be specified as clear, unambiguous and structured questions. In step 2 “Identifying relevant work”, searches for studies that will be included in the literature review are conducted. Selection criteria (inclusion criteria and exclusion criteria) must be specified and have a clear connection with issues for the literature review. In step 3, the quality of the studies is assessed, while in step 4, findings are summarized. In the fifth step, the findings are interpreted [5].

## B. Game analysis

Game analysis involves a systematic approach to game content exploration. Consalvo & Dutton [9] have defined four areas for game analysis: Object Inventory, Interface Study, Interaction Map and Gameplay Log, in their process of developing a qualitative, critical game analysis method of "text" (broadly defined). The areas allow for cross-game comparisons to help researchers identify patterns in game / game genres. Aarseth [10] uses the term "the playing analyst" to describe and problematize the researcher's role in game analysis, and distinguishes between free play, analytical play and non-play in game analysis.

Fernández-Vara [11] describes how game analysis is related to textual analysis, and differs between a structuralist approach and a post-structuralist approach to game analysis. In a structuralist approach the game is connected to other games, e.g. looking for what different games have in common, finding recurring patterns in their design, topics, aesthetics etc. A post-structuralist approach will focus on sense-making while playing a game, the context in which it is played or how it may be understood by different audiences.

Fernández-Vara [11] also defines how to approach game analysis, by three interrelated areas: the context, the game overview, and the formal aspects. Analyzing the context means considering other circumstances that may affect the way we understand the game. Analyzing the game overview, the researcher focuses on the content. "In games, the formal aspects refer to the system of the game and its components (the rules, the control schemes), as well as how the system is presented to the player (interface design, visual style)" [11].

## II. METHOD

### A. Action research

The study is based on an action research approach, where the "main aim is to improve practice" [Elliot in 12]. In this study, the goal was to improve the learning of a research method that is of particular interest for game development students, both when it comes to learning outcome and learning method. "Action research is a useful tool for change and improvement at the local level" [12]. Even though there are many studies using game analysis as a research method, there is hard to find a "how to"-guide for students on how to perform game analysis. The book by Fernández-Vara [11] is an extensive introduction to the topic, providing students with tools to analyze games using procedures from textual analysis, but is not found to be a precise and easy introduction to the topic for undergraduate students.

Cohen et al [12] present how numerous researchers have created procedures/steps for action research. Most procedures are quite similar. Even though some are five-step processes, and some are eight-stage models, they all reflect how Kemmis and McTaggart [in 12] argue that action research requires systematic planning, acting, observing and reflecting.

### B. The context

The research was conducted in a game development study program, in a research method course for 3rd year bachelor students. Using a research method as a learning approach, with students working as a team to create new knowledge, was a

new way of conducting active learning in this course. The pilot implementation took place in the fall semester of 2019, spending 2 sessions throughout 2 weeks to conduct the systematic literature review.

Before the learning activity, the teacher prepared the systematic literature review. S/he formulated the research questions, decided in which databases to make the search, decided the inclusion and exclusion criteria, made the search and presented an overview of the relevant articles to the students. In addition, the teacher prepared a draft of an analysis framework as part of the preparation. The students got an introduction to the preparatory work of the teacher, in order to learn about the whole process of a systematic literature review, and together finished the analysis framework through a plenary discussion of the teacher's draft and what was missing in the draft.

Each student chose one article from the list of scientific articles, and read and analyzed their chosen article. The analysis framework was published to the students as a questionnaire in the digital tool "nettskjema.no", after considering and evaluating the pros and cons of a number of different tools. The questionnaire consisted of 12 analytical questions, mainly open-ended questions. In addition, they filled in meta-data like APA reference and abstract of article. The questions in the analysis framework were as follows:

- Is the name of the game(s) (which are analyzed) presented?
- What type(s) of games are analyzed?
- What is the objective of the game analysis?
- What is analyzed (what components in the games are focused upon through the game analysis)?
- Which method / theoretical framework for game analysis is used, if any?
- Which methods / theoretical frameworks for game analysis are referred to (but not used), if any?
- How is data collection performed?
- How is analysis performed?
- Who is performing the game analysis?
- Is the game analysis qualitative or quantitative, or mixed methods?
- What type of game analysis is performed (if defined in the article): a comparative game analysis, a descriptive game analysis, a case study, experiment, survey?

Through observation during the learning activities in class, the main experience was that the students were positive towards the learning activity and worked intensively with their individual task, reading and analyzing their chosen article. After 2 hours of work, we paused the individual work and students were encouraged to describe the game analysis focus of their article. 10 voluntary students explained to the class how their article used game analysis, including 2 students who hardly ever say anything in class. This happened despite the fact that none of the students had had the opportunity to prepare, as the articles were chosen in class. The students then continued their individual work for another hour in the classroom. Students, who were not able to finish their review during the session got a due date to hand in their review, one

day before next class (1 week later), in order for the teacher to have time to prepare and present the results of the systematic literature review. The teacher also prepared some examples of how to analyze the students' data before the second session.

Fifteen students finished a review of their article. Results from all analyzes were made available to everyone during the second session, and the analysis and interpretation of the results were performed in plenary. Instead of each student reading only 1 article, all students now got an overview and main points from many scientific articles about game analysis. In addition, they learned about systematic literature review as a research method by doing a systematic literature review together.

### *C. Students' perspectives*

After the learning activities, a digital evaluation form with 18 questions was filled out by the students. The aim of the evaluation was to collect the students' experiences of the learning activities. The form had 10 open-ended questions and 8 multiple choice questions. Fifteen students answered the evaluation form.

### *D. Teacher's perspective*

During and after completing the teaching activities, the teacher observed and evaluated the learning/teaching activities. The observation form was inspired by Furberg & Lund [13], who defined the following key dimensions in the design of ICT-based learning and teaching activities: Learning outcomes; Learning resources; Learning activities; Task formulation; Student products; Teacher role; Surrounding conditions; The meeting between intended and realized learning design; Assessment of student performance; Self-reflection and Feedback. These dimensions served as a reflection tool for the teacher during and after the learning activities. The self-reflexive practice was performed in order to disseminate to other teachers, but also to ensure the cyclical process of action research, making modifications throughout the process.

## III. FINDINGS ON RESEARCH METHOD AS LEARNING METHOD

The students' perspectives concerning using a research method as a learning method are presented through three concrete focus areas: 1) What did the students learn, 2) Involving students in research/knowledge construction, and 3) Four types of research-based education. Then the teacher's perspectives concerning the topic are described.

### *A. What did the students learn*

In order to evaluate what they learned, the students were asked to name 3 things they learned about the research method "systematic literature review" and 3 things they learned about the research method "game analysis".

Some of the students clearly defined that they learned important parts of a systematic literature review, like learning "how to define research questions", "how to define the parameters for the articles to be used" even though the teacher prepared these steps of the review in advance and presented this as an introduction to the student work. Some students directly pointed out activities of a systematic literature review that they took part in, e.g. "how to spot the important key factors", "text comprehension" and "data collection from articles". Other students had a more holistic view to what they had learned about systematic literature review as a research method. This was done through 2 approaches: 1) by summing

up the main traits of the research method: "it enables us to analyze a wider body of research for commonalities", "it's a huge sample of literature, where you grab what others have done to see how you'd do it yourself. Basically obtaining data about a topic through literature", and "Filter articles and make a pool, analyze and code them and then draw some conclusions" or 2) by evaluating the research method "it requires quite a bit of time and effort", "it can be quite complex to set up" and "Depending on the material it can be very time consuming".

Defining what they learned about the main learning objective, which was learning about game analysis as a research method, one student only refers to the article s/he read and analyzed individually: "Comparison of the same game on different platforms is a valid method", ... while other students synthesized information from the collective review process, e.g. "it is mostly used for qualitative research", "there are a plethora of ways to perform it", "There does not seem to be a common framework for game analysis..." and "can be used to analyze any part of a game". Some students focus on their learning of how to do a game analysis, e.g. "data collection for game analysis, which I had not very clear before".

Some students evaluated what they had learned based on personal interests (e.g. for next semester's bachelor project): "that I could actually have used in my thesis" and "I learned that it's something I'd like to use".

One student concluded that "unfortunately I did not feel I learned as much about game analysis as I did about systematic literature review", and analyzing the student's experiences, this is also the impression for several of the students. Since learning about game analysis was the main learning objective, this is important feedback to the teacher. However, it may also be explained by the fact that systematic literature review as a research method is a well-established research method with well-designed phases and "how to"-guidelines. Game analysis as a research method is not as well-defined, and the results of the students' systematic literature review also show that there are not one well-defined procedure of how to do a game analysis in a scientific manner, but a large variety of how to approach games scientifically.

### *B. Involving students in research / knowledge construction*

The students were asked about what they think about involving students into research / knowledge production in higher education, and the answers can be divided into two groups: those who think it is very positive and those who rather would like to do development projects.

The students who are positive towards involving students in research, express this through quotes like "It is really important for their future because research is fundamental for their future studies and work", "Involvement is fine, learning about research and how it is important and also fun, is good" and "I think it is very important, as if a student want to research or publish research papers for a higher degree, or simply immerse themselves in a field of interest, then they would know how to go about it."

The students who prefer development projects instead of involvement into research, express this through quotes like "I would think that it is dependent on the study program, personally for this study program I don't find it that necessary and would rather have more time to work with portfolio

relevant projects”. One student is referring to both types of students: “Very important for those who lean towards continued education or doing their own research. Less important for those who need to build a portfolio and practical skills for private sector employment.”

### C. Four types of research-based education

The pilot was extraordinary as it included all four types of research-based education [2]. The curriculum was based on Khan et al.’s [5] steps for systematic literature review and the articles were research articles from well-known academic databases and was therefore “research-led”. The project was also “research-oriented”, as the students had to analyze an article focusing on the research approach used in the articles presented. The project was research-based, because the learning activities were inquiry-based, and finally, the teacher conducted the project within the frames of action research, which also made the project research-informed.

When evaluating the four types of research-based education [2], most of the students reported that all types are important to a large extent or to some extent (see figure 1). Research-informed teaching was the only type of research-based education that a few students characterized as “not important at all”.

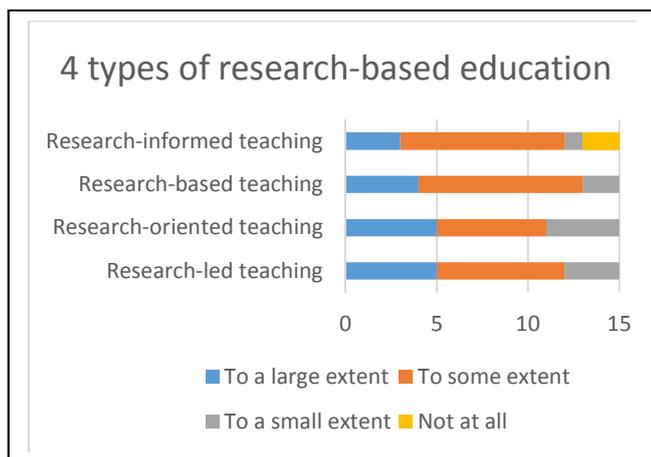


Figure 1: The students’ evaluations of how important different types of research-based education are.

### D. The teacher’s self-reflection

Reflection is an important part of the action research approach. The dimensions for the design of ICT-based learning and teaching activities [13] are used to systematically guide the teacher’s self-reflection of the pilot.

Learning outcomes: The learning outcome was primarily to investigate what game analysis is and how researchers use game analysis as a research method, secondary to learn about systematic literature review through “learning by doing”. Using one research method to learn about another research method, requires that it is clear when the students have to focus on which research method, avoiding students to mix up the two research methods. This was one of the expected challenges, but it turned out that the students handled this without problems, and no modifications where necessary during the pilot.

Learning resources: There were 4 main learning resources: Khan et al.’s 5 steps for systematic literature reviews [5], the shared excel file with the article overview and access to choose article, the digital analysis framework available in the questionnaire tool nettskjema.no, and the final PowerPoint presentation, which presented the data from the systematic literature review and examples of how to analyze and interpret the data. All the learning resources were prepared by the teacher, and the students contributed by choosing articles in the shared excel file, by finalizing the analysis framework in plenary, analyzing articles through filling out the analysis framework, and interpreting the data presented in the PowerPoint file.

The use of Khan et al.’s [5] 5 steps for systematic literature reviews, was helpful as it structured the process for the teacher and the students, and made it clear which step of the process we had finished, worked on and the further progress. It functioned as a scaffold for the students in their learning process.

The shared excel-file had an overview of all articles, both included and excluded articles. The articles to be included in the systematic literature were written with green text color. The excluded articles were written in red text color and also had the reason why they were excluded. The students could select the article they wanted to review by writing their name in the first column, on a first-come-first-serve basis. The digital spreadsheet allowed for coordination of the collaborative work.

The analysis framework was built in the digital tool nettskjema.no and used by the students in step 4 of the review process. Nettskjema is a digital questionnaire tool with some features specially adapted for research and education. In addition, it has been specially adapted to meet Norwegian privacy requirements. The students had access to all questions at all time, and could answer the different questions in their desired order. The tool did not allow the students to synchronously see the analyses of their peer students, which was considered a weakness, and the teacher had to export the results after the students filled in their analysis. The analysis framework helped the students focus on the same aspects in their individual contribution of the analysis. Allowing the students to finalize the analysis framework in plenary created active students discussing what they found important to learn about game analysis.

The teacher presented the results in the second session through a PowerPoint presentation. The PowerPoint slides worked as a learning resource for the collective interpretation of the results. The first slide was a repetition of the phases of a systematic literature review, also illustrating which steps were finished and which steps to address. Since many of the questions from the analysis framework were open, most answers were written as text. This provided the teacher an opportunity to show how to analyze data, using e.g. color coding and categorization. The data from the multiple-choice questions were presented as diagrams. After presenting the data from the systematic literature review and discussing the initial analysis, the teacher presented two questions in the end of the session: 1) ”What are our main findings?” and 2) “Can

we make a model, overview or method based on the findings?” The students actively engaged in answering the first question, and clearly demonstrated that they had learned a lot about game analysis as research method, which was the learning objective. The second question was asked to show that it is possible to end up with a specific product based on data, analysis and interpretation, but the teacher did not expect that the students were able to present e.g. a model after working on the topic for 2 sessions. To the teacher’s surprise, one of the students actually had an idea of a model. He got up to the interactive whiteboard and started drawing an example of a model.

**Learning activities:** One of the main goals of the learning activities was to activate the students with inquiry-based tasks, instead of doing a one-way lecture on the topic. The learning perspective of the teacher is socio-constructivism, and the aim is to plan for active learning where students collaborate and critically analyze the learning content.

The learning activities were designed to create variety. The learning activities were based on a collective approach to reach the learning objective, but also included individual contributions throughout the process. The learning activities also included both written work and oral discussions. Each student contributed with their part, which was important as a piece in a larger puzzle.

**Task formulation:** Using the steps in a systematic literature review, the analysis framework was developed. This worked as a clear task formulation together with the research questions from step 1. Some of the questions in the analysis framework demanded previous knowledge to the topic, but the digital tool in use (nettskjema.no) provided an opportunity to explain unknown concepts of each question, and there were no questions from students concerning what to fill in. For the second session, where the students had to analyze and interpret the results, specific examples of coding, categorization and interpretation were provided based on the students’ findings. This made the students aware of how to execute also this work in the last stages of the learning process.

**Student products:** The student product of the learning activities was in early phase an individual analysis of a chosen article, delivered through the analysis framework in nettskjema. In later phases of the learning process, the student product was a collaborative overview of the results of the analysis. Digital tools like nettskjema, google forms, analyzer, questback, surveymonkey etc. are useful to collect the students’ individual findings into a collaborative overview. Furthermore, one of the students also suggested a draft model based on the collaborative analysis and the interpretation. The teacher challenged the students to design a model based on the results but did not expect anyone to actually present a model on such short notice. Experiencing one student presenting a draft of a model on the smartboard was surprising and quite impressive.

**Teacher role:** The major part of the teacher’s task was in advance of the first learning activity, where the teacher had to formulate the research questions, decide which databases

to search in, decide the inclusion and exclusion criteria, make the search, scan the articles, present an overview of the relevant articles and prepare a draft of an analysis framework. During the first session, the teacher’s introductory work of the systematic literature review was presented to the students as an introduction to the learning activity. The teacher was available while the students read their chosen article, but not many questions appeared. The teacher also facilitated the collective interpretation of the individual analyses, showing how to code and categorize the data, but also facilitating the discussion about the results.

**Surrounding conditions:** The learning activities were not mandatory work. The students had five mandatory assignments throughout the course, but the research activities were not included into the assignments. This resulted in that not all students finished their analysis. In the evaluation form, a few students said that since they were not able to read and analyze the whole article during the first session, they prioritized other assignments instead of finishing the analysis between the sessions.

**The meeting between intended and realized learning design:** The teacher experienced (and some of the students reported) that the students learned more about the secondary learning objective (how to do a systematic literature review) than the primary learning objective (how to do a game analysis). In retrospect, the teacher concludes that there should be time to perform a game analysis after the systematic literature review. Since the learning objective was about learning a procedure (even though the procedure is ill-defined and need to be adapted from case to case), it is probably valuable to do the procedure, rather than just learning the theoretical part of the procedure. However, this does not mean that the students did not learn anything about the primary learning objective, and the teacher was to some degree satisfied with the students’ knowledge about game analysis as research method.

**Assessment of student performance:** The learning activities were voluntary, but the students had to deliver a project plan for their bachelor project for the exam later in the course. Some students chose to use “game analysis” as the research approach in their project plan, and therefore needed to show that they know method theory about game analysis, and transforming the theory into a plan of how they will conduct a game analysis. Most of the students therefore actively involved in the learning activities.

The students’ individual performance while reading and analyzing their chosen article was good. The teacher had been reading all paper abstracts during the preparations and the students show through their analysis that they had read and understood the articles.

**Self-reflection and feedback:** The systematic approach of action research in the pilot has ensured the self-reflection. The central dimensions for the design of ICT-based learning and teaching activities [12] served as a reflection tool for the teacher during and after the learning activities. The students reflected upon their learning process in a post-evaluation form.

All in all, the teacher experienced that using an action research approach trying to improve the teaching and learning process was useful in the quality work of a teacher. Self-reflection in the combination with student evaluations provide data, which inform also other teachers about learning approaches, and what to consider to improve the learning approach. The teacher's systematic self-reflection throughout the process also allowed for modifications and improvements of the learning activities, e.g. the importance of using well-designed steps of the systematic literature review method to scaffold the students' learning process, not only as an introduction to the study, but throughout all learning activities.

#### IV. DISCUSSION

##### A. Which research method to use as learning method

Some students suggested that instead of using systematic literature review to learn about game analysis, they should have performed a game analysis instead, to learn how to perform a game analysis. Two students were very specific about how they would prefer to learn about game analysis: "We discuss in class, and make a table with parameters for what we want to analyze, maybe groups of students can together choose their own research (sound, feedback etc.) and then we could play a video game in class together, where we could discuss how well we feel that game did this or that etc." and "Use a video game as an example, and make every student study it, so everyone can compare their studies with their classmates". Using the game analysis research method as a learning method is also an interesting concept, but as a teacher it is also important that the students have some frameworks, to scaffold their learning process and to ensure that they learn more than what "common sense" can provide. The methodologies for conducting a systematic literature review [5, 6, 7, 8] do offer scaffolding. If time, it could be very interesting to do a game analysis with the class after doing the systematic literature review, preferably based on how-to procedures made by the students based on the systematic literature review.

##### B. The teacher's role

The research method "systematic literature review" can be considered to be an easy research method to use in the classroom, since it is well-defined through steps and phases, with specific procedures. This does not mean that it is easy to use as a teaching / learning method, as the teacher must decide which parts of the stages to prepare in advance, and in which stages it is useful to involve students. This depends on the student group and the subject. "Undergraduate students often lack the skills necessary to conduct independent research." [14]. Research methods that do not have as well-designed procedures to follow, will be harder to use as learning methods for inexperienced students, and will demand more efforts from the teacher.

##### C. The students' ownership to the study

Greening and Kay [4] argue that it is valuable to have students do a complete individual research project,

simplifying the process through offering a supportive structure, but without sacrificing student ownership of the experience. In the study presented in this paper, the students took part in parts of a research study, with a focus on having students work together as a research team. The students' ownership to the research project could be challenged, but the teacher let the students grow ownership to the work through allowing students to change the analysis framework, and through teaching analyzing techniques using the students own data and showing how each student's contribution was important in the interpretation of the findings.

##### D. Types of research-based education

It is understandable that research-informed education [2] / education research is not found as important for students as for teachers, as it is a development tool for the teacher. It is however of great importance for the quality of the education, which influences the students a lot. It must be mentioned that most of the students evaluated research-informed teaching important to a large extent or to some extent. Research-based teaching [2] (letting students learn inquiry-based) was the type of research-based education found most important by most of the students. This type of research-based education allows students to be active and engaged, and the students show that they appreciate that.

#### V. CONCLUSIONS

Introducing research methods to IT students requires the use of relevant methods and active learning. Research methods as learning methods are interesting in higher education. It is important that students in higher education learn methods of knowledge production, and that students get a sense of contributing, not just consuming knowledge produced by others. Research-like working methods [1] are an approach to this. This article has presented the process, findings and reflections from an action research project focusing on using a research method as a learning method, more specifically using a systematic literature review to learn about the research method game analysis.

The findings show that the students are active and engaged when using a research method as a learning method, but that a concern is that the learning outcome is rather on the learning method than the primary learning objective. A research method with well-designed steps and procedures works well to scaffold the learning process. The teachers' role is important, and it is necessary to consider which stages of the research process the teacher should prepare and in which stages to involve the students. As in most student-active learning activities the role of the teacher is as a facilitator.

Not all students praise involvement of students into research and knowledge production, and the student feedback can be divided into two: those who thinks it is very positive and those who rather would like to do development projects. Research-based teaching (letting students learn inquiry-based) was the type of research-based education found most important by most of the students, while research-informed teaching (education research) was the only type of research-based education that a few students characterized as "not important at all".

The study also revealed that there is a need for a better definition of game analysis as a research method, with clearly defined “how to”-guidelines for inexperienced researchers and students doing a bachelor project or master project.

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