Learning by Designing Interview Methods in Special Education

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Abstract. With the current emphasis on innovation and research in higher education, this paper proposes design-based research as base for a teaching approach to enhance the learning environment of university college students. The paper depicts how students, professors, professional educationalists, and people with learning disabilities worked together to develop five new visual and digital methods for interviewing in special education. Thereby not only enhancing the students' competences, knowledge and proficiency in innovation and research, but also proposing a new teaching paradigm for university colleges and providing new tools for communication in special education.

Keywords: Design-based research · Learning by designing · Higher education

1 Introduction

University colleges in Denmark provide higher professional education. Programs lead to bachelor's degrees in areas such as social education, teacher education, social work and nursing and include internships/placements, thus, integrating theory and practice.

Regulated by execute order from the Ministry of Higher Education and Science, programs were recently changed from myriad parallel modules to short singular modules with particular emphasis on innovation, research and cooperation with practice. These changes were implemented in order to boost education to a higher level of academia, to innovate new practice-oriented products and services, and to make education flexible [1].

Such structural and curricula changes call for a new learning environment. An environment that raises the following research question: *What characterizes a teaching approach that has the potential to enhance students' research and innovative competences, knowledge, and proficiency whilst being embedded in practice?*

By taking point of departure in design-based research (cf. [2]), the paper proposes a comprehensive teaching approach. Thus, bridging the gap in literature and meeting a current need for clear guidelines in how to incorporate innovative approaches in teaching and learning [3]. As way of example, the paper uses a module in a social education

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program[1] and gives valuable insights into how students, professors, professional educationalists, and people with learning disabilities[2] worked together in a design process. The paper shows that not only did this collaborating design process enhance students' research and innovation competences, knowledge and proficiency, and gave way for a new teaching approach, it also resulted in five new visual and digital interview methods for interviewing in special education.

2 Design-Based Research as a New Teaching Approach

Design-based research (DBR) emerged in the 1990s [4, 5] as an educational technology in an attempt to enhance teaching and learning within the social constructivist learning paradigm [2]. DBR is a comprehensive approach, which retrieves data by designing, refining, and testing a design focusing on either education, learning, and/or didactics [6] and which can '…account for and potentially impact learning and teaching in naturalistic settings' [7]. DBR is characterized by the close collaboration with practice throughout the design process and, thus, offers an approach which combines theory and practice. In DBR students become active learners and are 'learning by designing' [8] through hands-on experience with e.g. creativity [3] and mathematics [4, 9]. Building on this, the proposition will show how DBR is adaptable to a university college setting with emphasis on students' competences, knowledge, and proficiency within innovation and research, whilst at the same time addressing a current need in practice by creating an adaptable solution.

Table 1. Teaching approach

	Phase 1	Phase 2	Phase 3	Phase 4
People with learning disabilities			Co-designing the prototype	
Students		Designing the first prototype	Designing + testing the prototype	Refining prototype Presentations Writing chapter
Professional educationalists	Experiencing a need for new interview methods		Expert group Mentoring	Expert group Mentoring First feed-back on methods
Professors	Identifying a need for new interview methods	Teaching Supervision	Teaching Supervision	Teaching Supervision

[1] The program provides qualifications for working with development and care assignments among children, young people and adults with reduced psychological or physical capacities.

[2] In this research, people with learning disabilities are limited to people in need of care by professional educationalists, i.e. people with downs syndrome, mental retardation, autism etc.

The model presented above (Table 1) is adapted from Thomas Reeves (2006). Reeves' original design model depicts four phases. In phase 1, researchers and practitioners analyze practical problems in order to put forward the research objective. Phase 2 focuses on the development of solutions using existing design principles and innovations, whereas phase 3 is an iterative cycle of testing and refinement of the solution in practice. Phase 4 produces design principles and focuses on the implementation of the solution [2].

This research proposition follows Reeves design model, yet elaborates the model by proving details about the particular roles of students, professors, professional educationalists, and people with disabilities (Table 1), and by presenting the cycle of testing and reflection/refinement (Fig. 1). The adapted model is explained below.

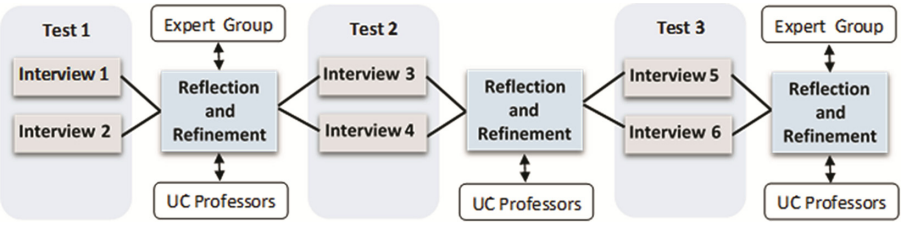

Fig. 1. Iterative test cycle for each interview method

Phase 1: Identifying the Need for New Interview Methods in Special Education. The first indications of a need for new interview methods in special education were brought to light with teaching interview methods in a social education program. In social education, interviewing is a crucial part of gaining insight into the thoughts and feelings of the target group. From that, professionals can adjust and accommodate the appropriate pedagogical and educational measures to the individual. Yet, very few publications focus on interviewing in special education and even less address or describe the particularities regarding people with learning disabilities [10, 11].

The lack of literature mirrored the lack of concrete methods in practice. This was recognized on a university college meeting with representatives from professional educationalists working in special education. Professional educationalists argued that people with learning disabilities have difficulties in communicating their ideas due to poor language, cognitive, and motor skills, which often leave the professional educationalists as the decision makers for people with learning disabilities. Thus, although professionals already use different communication techniques, they identified a need for a more systematic approach, where people with learning disabilities are able to communicate their perception of life.

From the above, it is clear that the need for new interview methods in special education was identified in both academia and in practice. To address this gap, seven professional educationalists joined an expert group. The expert group was to work with two university college professors (the author included) in order to identify which interview methods to design and refine for use in special education.

Visual and digital techniques are often used in special education settings for communication and documentation purposes. For example, drawings are used to illustrate the structure of the day for the autistic and pictures are taken to document a holiday as a reminder for people with a lack of memory. These experiences from practice and the fact that visual and digital methods in research often prove beneficial when working with children and others who may have verbal limitations, let to the decision that all interview methods were to be either visual, digital or both. Drawing on experiences in both special education and in academia, five visual and digital interview methods were chosen, namely: (a) Photography, (b) Film, (c) Scrapbook, (d) Digital storytelling and (e) Talking-mats[3].

Phase 2: Developing New Interview Methods. Twenty university college students from the social education program joined the research in phase 2 as part of a five-week module focusing on research and developmental projects. The first part of phase 2 focused on academia and provided knowledge of DBR, the history of participation and decision making among people with learning disabilities, and ethnographic interviewing with particular emphasis on special education. Students were also introduced to visual and digital methods. In groups of four, students worked with a particular method and designed their first solution, i.e. prototype, by combining their knowledge of education and methods. University college professors supervised this latter part of the phase.

Phase 3: Iterative Cycle of Testing and Refinements of Interview Methods. The third phase consisted of an iterative cycle of testing and refinements - starting with test 1 (see Fig. 1). For testing, each group split into pairs allowing each group to carry out two tests in each test cycle, thus, doubling the amount of data[4].

Interviews were carried out in care facilities, either at the work place or in the homes of people with learning disabilities. All interviews focused on the lawful right to participation and decision making in one's life, yet the main focus of the interview was for students to pay attention to the target group's needs and the potential to use the method as a way of communication. This potential was monitored by the use of notes and by video filming.

After test 1, students returned to university college for reflection and refinement. The pairs rejoined their methods group and a lecture on analysis served as a springboard for this next stage of the design process. Each group analyzed their videos and discussed similarities and differences between the two interviews by paying careful attention to the flow of the interview, language, body language, and the influence of e.g. time and setting. Overall, the method's ability to work as a tool of communication was scrutinized and sequences of particular interest and concern was presented to the expert group of professional educationalists. Professional educationalists and students then discussed the findings and worked together – along with input from university college professors - in order to refine the methods. For

[3] Talking mats involves the use of a mat and picture communication symbols. People communicate answers by placing a picture beneath a happy, neutral or angry smiley.

[4] Two interviewers instead of four also limited the amount of stress for the interviewee.

example, the group of students using photography as a method of interviewing first disregarded people with learning disabilities as photographers, yet encouraged interviewees to take pictures in the refinement of the method as it became clear from watching the video and from the discussion with the expert group that this was certainly an option. In this way, people with learning disabilities also became co-designers of the prototypes, as they informed the design process during the interview.

In test 2, the refined prototype was tested again. Tests were carried out with new interviewees so that prior knowledge of the method did not influence the interview. This interview was analyzed, reflected on and refined into a prototype for test 3. After test 3, the interview data from all six interviews were analyzed and discussed in each group. Again, the expert group mentored the students along with the professors. The process ended with a refinement of the prototype into a new interview method.

Phase 4: Reflections on New Methods for Interviewing in Special Education. Throughout the design process students reflected upon the applicability of the interview method. In phase 4, these reflections were explored even further as each group of four presented their method on two occasions. First, the interview method was presented to the other four groups, the expert group and the university college professors. At the presentation, each group reflected on the design process, the interview method as well as its potentials and limitations. This allowed a discussion of the particular method and its applicability in special education, which also served as the first feedback to the expert group. The second presentation was carried out at a peer conference. The conference functioned as a "show and tell," in which students explained and demonstrated the method to their peers enrolled in parallel module projects - and to students and visitors at the university college on that particular day.

Presentations, along with the work and reflections carried out throughout the design process, laid the foundation for a forthcoming book on the subject of interviewing in special education. In more detail, students were instructed in writing and supervised intensively during a two-week writing period. These efforts resulted in five methods chapters focusing on interviewing with the use of photography, film, scrapbook, digital storytelling, and talking mats. The chapters will be published together with writings on DBR, the history of decision making among people with learning disabilities as well as an introduction to interviewing in special education [12].

In addition, students will visit the involved care facilities. These visits have a dual purpose. On one hand, the visits focus on sharing the knowledge and discussing the implementation of the method with the professional educationalists. On the other, the visits serve as a way to give back and thanking the people with learning disabilities. As will be demonstrated in the findings below, the visual and digital methods proved highly effective tools of communication. This meant that students connected well with the interviewees, and thus, were asked to come back by professional educationalists and people with learning disabilities alike.

3 Findings

Drawing on the design process presented in this paper as well as observations, informal conversations, and semi-structured interviewing [13], findings show that students were 'learning by designing' during the module. By applying knowledge from lectures on DBR, the history of participation and decision making among people with learning disabilities, ethnographic interviewing, visual and digital methods as well as analysis and writing, the students were able to design, test and refine the interview methods. Thus, allowing them to both learn and develop the profession.

Students' competences, knowledge, and proficiency in innovation and research were demonstrated vividly and visibly in the presentations and by their ability to write a chapter for a book on visual and digital methods in special education. Additionally, when asking students about their learning outcome, they spoke enthusiastically about the design process and highlighted the possibilities to do further testing and refinement in their upcoming internship/placement:

Sophie: *It's gonna be interesting if you can refine it even further. Maybe come up with new ideas.*
Mary: *Exactly, we can do some testing.*
Sophie: *There's great potential.*
Mary: *Definitely. And I really think the possibility to learn these kinds of things is so cool; to test these things because we can use this in the future.*[5]

As stated in the interview excerpt above, students expressed great interest in further advancing interviewing in special education. Although some students were more reluctant and unsure of themselves as interviewers due to lack of experience, it was apparent that all students agreed to have gained competences, knowledge, and proficiency in innovation and research, thus, enabling them to test and refine work related issues in future careers.

When asked for further details about their learning outcome, students praised the close relation with practice. The fact that they were designing new interview methods because of an actual need was highly motivating for them and linked their studies to the profession. Furthermore, the collaboration with practice played an important part in students' learning. The mentoring from the expert group and the openness and willingness from the interviewed people with learning disabilities were highly appreciated and both groups were seen as significant partners.

Indeed, cooperation had a significant impact on students' learning as well as on the professional educationalists and the people with learning disabilities involved. Although a bit embarrassed by being referred to as experts, the professional educationalists embraced their role as mentors and used their expertise in the design process. They spoke highly of a fruitful design process and saw themselves and the people with learning disabilities as co-designers of the five interview methods. The professional educationalists in particular appreciated the diversity of the methods. By referring to individuals in their care facilities, they were able to identify and match which method would aid communication with whom

[5] Names are kept anonymous. Statements are translated from Danish to English.

and highlighted how people with learning disabilities were able to voice their thoughts and feelings:

Nina: *The citizen is talking: "This is where I am and this is what I would like to develop." We are no longer the interpreters.*

The professional educationalists, as seen above, saw the methods as tools of communication that would support people with learning disabilities to keep focus and enable professional educationalists to listen. The methods, they argued, would provide professional educationalists with insights and understandings, instead of leaving them to rely on their own interpretations of people with learning disabilities' needs. They supported this argument by referring to interviewees who used the methods to become decision makers in their own life. In regards to talking mats, for example, a man was able to communicate his lack of privacy in his own home by the use of smileys and another man was able to communicate how he wanted his flat decorated for Christmas by the use of digital storytelling. The latter even taught his peers how to co-produce small films expressing thoughts and feelings about everyday life.

Now, considering the above, it is clear that the teaching approach, presented in this paper, has the potential as a new teaching paradigm for university colleges. The teaching approach, built on the principles of DBR, is characterized by being experimental, collaborative as well as theoretically and practically sound. Not only does the teaching approach successfully enhance students' competences, knowledge, and proficiency in innovation and research, it is also highly embedded in practice by addressing a current need and creating an adaptable solution. In summary, combining theory and practice; the focal point of university college education.

4 Conclusions

This paper proposes a new teaching approach to enhance the learning environment of university college students. By adapting DBR to a university college setting, it depicts how students gained competences, knowledge, and proficiency in innovation and research throughout a design process focusing on developing new visual and digital interview methods in special education. This was illustrated in students' presentations and methods chapters as well as in their statements about further testing and refinement of interview methods in special education.

The proposition also demonstrates how a teaching approach embedded in practice affects the profession involved and ensures an adaptable solution. Testing the prototypes in care facilities enabled students to explore the interview methods in real life situations while people with learning disabilities were able to inform the refinement of the method during the test cycle (seen in Fig. 1). Acting as an expert group, the professional educationalists also took part in the design process and allowed practice-oriented solutions that promote people with learning disabilities to become decision makers in their own life.

Being characterized as experimental, collaborative as well as theoretically and practically sound, the teaching approach presented in this paper is capable to serve as a model for university college teaching in innovation and research. Although the model seems

flexible and adjustable to time scales and students' levels in academia and practice (e.g. project management skills, experience with target group etc.) further testing of the model is needed in order to grasp the full potential as a new teaching paradigm. Consequently, the future research plan involves, in conjunction with dissemination in various academic outlets, initiating dialogue between academia, practitioners and students in order to validate the proposition and support theory building. In particular, further attention could be paid to the establishment of the appropriate DBR mindset for designing, refining and testing the solution.

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