HIGHER EDUCATION TEACHERS MEET MOBILE TECHNOLOGY: APPLICATION AND ACCEPTANCE

Renée Schulz[1], Aleksandra Lazareva[2], Ghislain Maurice Norbert Isabwe[1], Andreas Prinz[1]

[1] *Department of Information and Communication Technology, University of Agder (NORWAY)*
[2] *Department of Global Development and Planning, University of Agder (NORWAY)*

Abstract

New technology-supported teaching concepts require validation through user testing and evaluation. This applies to our task-based mobile teaching support application, which introduces the concepts of dynamic tasks and feedback. It requires the teachers to design tasks and to identify appropriate sensors for meaningful feedback generation as well as to personalize tasks. The personalization is achieved by dependencies between tasks and sensor measurements. Different selections of tasks would lead to different students experiencing personalized paths in learning. Our prototype of this application was designed mainly for outdoor sports teachers in Norway. This paper reports about a user test of that dynamic task concept with sports teachers from Uganda, aimed at an improved design and user experience. We found several challenges connected to the concept itself, as well as technological issues. Finding meaningful sensors, and especially thinking of task dependencies is a challenge for most teachers. The paper presents an updated design to handle the issues found.

Keywords: Human-centred Design, Task-based teaching, Higher Education, Content Analysis.

1 INTRODUCTION

Supporting teachers in a meaningful way is one of the goals of this project. We want to support teachers in their teaching process with technology that fits their needs. We want to motivate them to use recent technology within higher education, in particular mobile and wearable technologies. We found that teachers hesitate to integrate technology in their teaching and the usage of technology in teaching is in most cases limited to presentation materials, interaction and exchange of files between teachers and students [1].

Conducting research about what technology is motivating for teachers to integrate, and what support is missing, we found the area of task design, distribution and task feedback is not sufficiently addressed. Teachers create tasks in almost all subjects, and many teachers claimed their motivation to teach being generated through seeing the students learn and getting feedback on the tasks students are working on [2]. We focus on task design and distribution since it is one of the most common overlapping points in many teaching approaches.

The use case we follow in this research is outdoor and sports education at higher education level. Previous testing was conducted with skiing and snowboarding teachers. From that testing a concept to support the task creation process was designed, using available technology like mobile and wearable devices. Mobile sensor technology and wearables are increasingly emerging in sports and fitness [3], however, there is still a lack of extensive research about wearables in the field of sports education [4]. Mobile devices are equipped with sensors to measure the context of the person wearing them. This enables to design tasks with consideration of additional user context information. From that, it is possible to design for personalized and more dynamic learning.

To evaluate the concept of dynamic tasks, the following research questions should be answered.

1 Can the concept of dynamic tasks be easily understood?

2 What challenges do teachers have in designing learning tasks using the concept of dynamic tasks?

To answer these questions, this paper reports on an evaluation of our concept and prototype for task-based teaching with a focus group in Uganda. The context and circumstances for technology in teaching is a lot different in Uganda than it is in Norway, where most of our user involvement and testing is done. Including teachers with different backgrounds, culture and experiences, and

ISBN: 978-84-697-3777-4

technology acceptance [5] also challenges the requirements we gathered and provides us with new insights.

The paper is structured as follows: First, the concept and prototype we designed is introduced in Chapter 2, including sample tasks from previous user testing. After that, in Chapter 3 the methodology within this study is described, including how and why we used qualitative content analysis. Chapter 4 groups the results within the categories we deductively and inductively found for the qualitative content analysis. The last chapter concludes the paper and describes future work.

2 DYNQ: THE DYNAMIC QUESTING APPLICATION

To explain the underlying issue and why this user study had to be conducted, we introduce our task-based teaching concept and prototype. The development of the prototype used in this research followed the human-centered design process according to ISO 9241-210 [6], in order to design a solution that is perceived as useful. For that, an understanding of the user's context, especially the teaching situation and teaching approach is needed. A context analysis provided user needs and requirements for a supportive teaching tool. From the start, we found task-based teaching to be one of the central areas in which teachers expressed a need for technology support. The main areas of support are task design, task distribution and feedback [2]. To refine requirements, users (teachers) were involved at every stage of development, keeping it design-based, highly interactive, iterative and flexible [7].

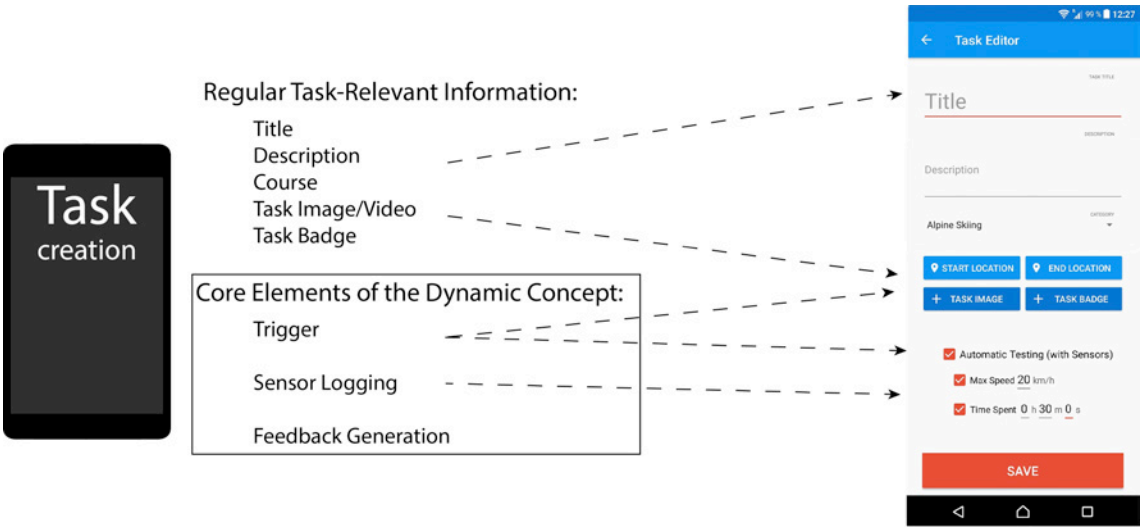

Figure 1. Task components and their representation in the prototype.

To design for a solution supporting teachers in outdoor education within their task design, task distribution and feedback processes, we developed a concept of dynamic tasks based on mobile and wearable technology. Sensor technology allows teachers to add new variables to their tasks, making them log the progress of the students as well as having tasks appear based on previously defined variables. The task design in dynamic questing (DynQ) supports the same task structure as teachers would use without mobile system support, but it adds the flexibility of dynamically providing tasks if needed. In addition to regular known task elements (task title, description, notes, resources), its added new core elements consist of dynamic task dependencies (*triggers)*, *sensor logging* and *feedback generation* (Fig. 1.). The elements of tasks in DynQ are shown on the prototype (Fig. 1, right side). If a teacher adds a trigger to a task, it enables dynamic flexibility of when tasks appear for the individual students. Triggers determine when a task is shown for a student. Triggers can be data obtained by sensor logging, specific location (GPS) or time set by the teacher. There are several types of triggers: context information of the student (e.g. the student's location) or an achievement (e.g. reached a certain speed), or a combination of both. An example for an achievement can be reaching an extraordinary speed during a task. The *sensor logging component* can provide measurable data, such as speed, acceleration, physical location, and time. This sensor-based data can feed a trigger's condition which can then be met (achieved) anytime during the training process. A trigger could also be the fulfillment of a certain task or task combination. In addition, sensor logging provides data for

feedback generation for teachers as well as students. Collected data can be visually shown in the interfaces of both user groups.

A sample task in the context of skiing and snowboarding is shown in Table 1. The task belongs to a certain course, has a title and a description. Our prototype uses a combination of a mobile phone and a smartwatch, where a short description can be shown. The adding of visual media was a requirement to support the task description. A level of task difficulty can be assigned by the teacher. For example, in case of a specific beginner task, students should not get in danger, but some incline of the slope is needed, therefore a gradual or beginner slope is chosen. Before the students go to an actual slope, they are training to skate with the board with one foot out of the bindings and get used to the movements of the board. Specific tasks that must be achieved are named “skating” and “stopping with one foot out”. Basic tasks should be shown even if the students have not met the requirements, but it should be visible which tasks need to be completed before enhancing to the advanced basics. For this example task, teachers indicated that it could be useful to see the number of accelerations and stops, hinting to number of tries and possible falls.

Table 1. *Sample task using the task elements for snowboarding beginners.*

Course:	Snowboarding
Title:	How to stop using heel press
Description	Stand with your entire body facing downhill and your board across the incline. Stand with your knees bent, and stay low. Concentrate on what edge control and stopping feels like. Press your heels into the back of the board and lift your toes off the ground very steadily.
Short Description:	Press heels, lift toes.
Difficulty:	Easy
Media:	<image>
Location:	On a gradual or beginner slope.
Dependencies:	Task “skating”, Task “stopping with one foot out”, Location.
Hidden/Shown:	The task should be shown, even if the dependencies are not met.
Badge(s):	-
Which sensors to log:	Number of accelerations, speed.

The DynQ concept enables teachers to design tasks for varying and different conditions, for different skillsets, locations and times (example shown in Fig. 2). Tasks are prepared before the teaching, so that students can freely discover the appropriate tasks within the teaching process or during self-practice, depending on when the system is used. Students can take different paths through the tasks pre-defined by the teacher, depending on the number and the complexity of the designed tasks. This not only supports personalized learning, it also aligns with creating knowledge through experimentations, as a part of experiential learning. In addition, it follows the gamification approach of creating motivation through exploration and the discovery of the unexpected [8].

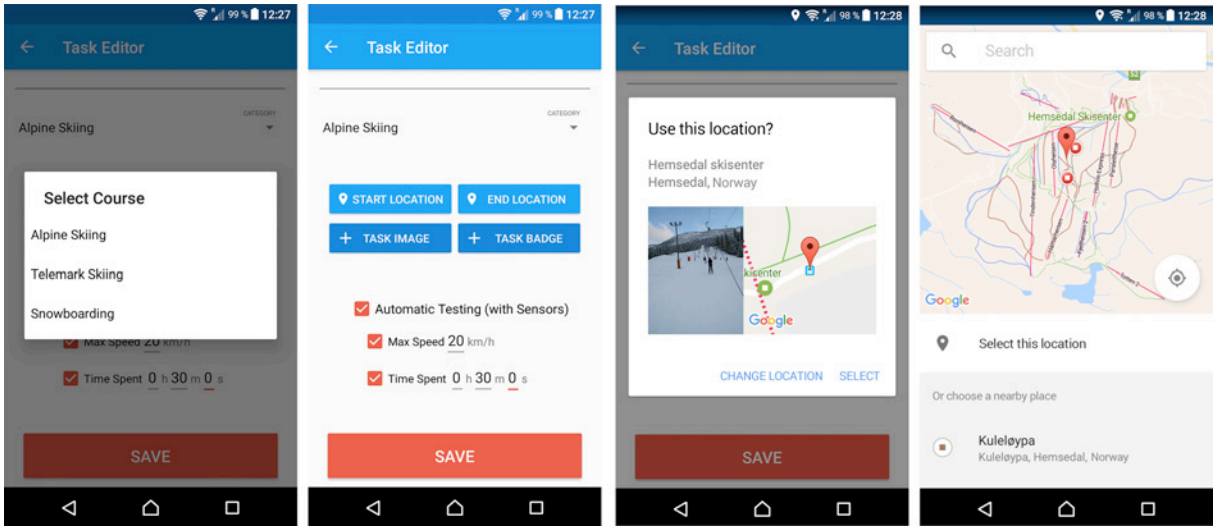

Figure 2. Example of how the task creation can look like with start and end location.

3 METHODOLOGY

This research uses a human-centered design process. It is part of one user testing phase, leading to a new iteration of the process. This study serves the purpose of testing an existing concept in a new and different context. The above-mentioned, task-based teaching tool DynQ and its applicability to different areas should be analyzed. The main goal is to find out if the concept is applicable and accepted by teachers from different areas.

Previous rounds of design and testing were conducted with teachers mainly in Norway. In the beginning, teachers with various backgrounds were involved, but the refinement, application, and most user testing was done in outdoor sports education. For a better design solution and user experience, we wanted to analyze the specific problems stated by Ugandan teachers (related to sports education) within their environment and we wanted to see if this other group of teachers can understand and apply the concept and make tasks for their own teaching after a quick introduction. Thus, a focus group interview as part of the human-centered design process gives us insight about their context of use as well as additional requirements for several different use cases within the area range of outdoor education. We want to expand our views in the direction of multiple sports in higher education (not only skiing and snowboarding), including related courses such as nutrition, sports theory and sports injuries.

The focus group interview was conducted with six higher education teachers from Makerere University, Uganda. The teachers with a background in sports education or a related field were chosen randomly. Two female and four male teachers participated in the focus group. Prior to the interview, we collected basic demographic information and handed out a questionnaire aligning the main topics that were discussed in the focus group discussion. The participants were between 31-50 years old with 5 teachers in the range of 31-40 years and one in the range of 41-50 years. Their teaching subjects include sports science, sports sociology, exercise health and age, outdoor activities, sports pedagogy, swimming, motor learning, sports psychology, biomechanics of sports and exercise, strength and conditioning, sports coaching, practical aspects of sports, soccer, basketball, tennis, volleyball, aerobics, nutrition, growth and development to research methods and epidemiology. All participants teach at least one subject connected to sports education.

For the analysis, we chose qualitative content analysis. Since the purpose of this analysis is testing our concept, we explicitly search for occurrences of concept parts, making it mainly a deductive analysis approach. Prior to the interview, the participants received a short questionnaire and sheets for additional notes, which were also taken into consideration during the analysis.

3.1 Focus Group

The important part that we were particularly interested in was about applying the concept to the teachers' own teaching, meaning they formulate existing or new tasks according to the DynQ concept (using triggers and sensor logging). That requires the participants to build on the concept idea and to

be creative about the problem to fit in or create new tasks for the dynamic concept. Our use case is quite particular for the Norwegian outdoor teaching situation, since we used skiing and snowboarding as a use case, user testing and observation scenario. During one to one interviews with teachers in Norway, we found that it takes time to introduce the teachers to the task concept, even though the use case of skiing and snowboarding was known to them. Given that Ugandan teachers are from a different teaching and technological background, we wanted them to be able to build on each other's knowledge within the discussion, so that we can reach a state of creativity, despite of the fact that the concept is newly introduced and includes snow sports as the example scenario. We wanted them to be encouraged by the possibility to discuss among themselves, build on their applicable ideas and see where it takes us [9]. We found the focus group to be the best approach because we were interested in how and why they think in a particular way, to explore their attitudes and needs and let the group dynamics take us to new and unexpected ideas [10].

Besides the demographics, the questionnaire asked the teachers which subjects they are teaching. The next question asked if the teachers use tasks and in which situations. They could choose from three options (tasks to be done during lectures, tasks to be done at home, and tasks for laboratory work) and it was possible to describe other options. Further, we asked if the teachers create tasks spontaneously depending on situations. In addition, they could specify the types of situations in which they need to create or adapt tasks spontaneously.

3.2 Qualitative Content Analysis Model

The focus group interview was video-recorded and transcribed, providing a textual base for analysis.

Using DynQ requires a basic understanding of its concept and how to use these possibilities within a certain area and approach to teaching. That is why we decided to use a qualitative content analysis model [11] [12]. The DynQ concept consists of at least three steps (Fig. 3). To use the concept in teaching, teachers must understand or know about conditional tasks, to understand the concept of task triggering (that something leads to a new task) and what triggers could be used in their specific field of teaching. In an optimal case, the teachers could connect triggers and tasks and they would understand which sensor information about their students would be useful for them. In the task design process, teachers must think about the creation of a trigger, insert the usual task information (content) and decide which sensors to track throughout the task for receiving visual or numerical feedback about the students' progress. The sensor tracking and the summative idea of the teacher's feedback needs can generate meaningful triggers. For example, a student can pass a location during a task, and the location triggers a task specific for that location. Further on, after finishing a task, a student can trigger another task with a specific requirement such as a summative result of having reached a maximum speed of 30 km/h.

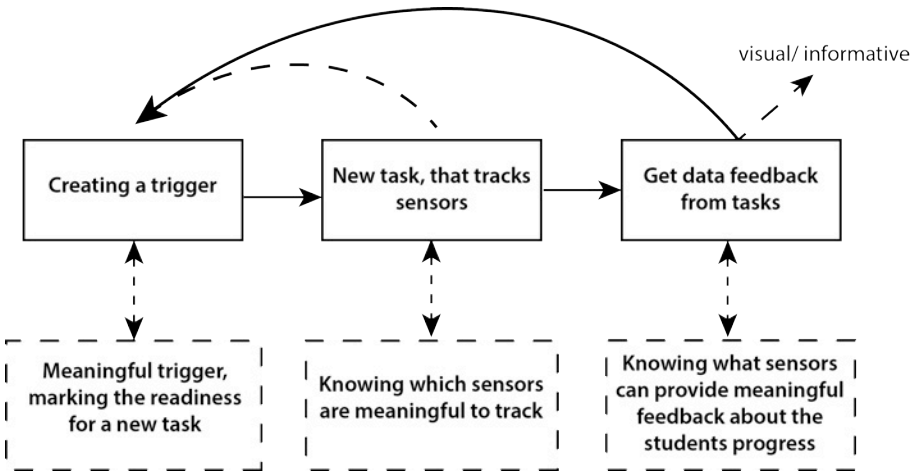

Figure 3. Steps used in the Dynamic Questing Application when designing tasks.

From the concept stated above (Fig. 3), the categories for analysis were designed. We were explicitly looking for the mentioning of these areas, and interested in the understanding and application of those. Therefore, the main category for qualitative content analysis is "*understanding of the dynamic questing application concept*". The explicit DynQ concept steps serve as the basis for our categories. The first one is "identify tasks", since it is easiest to understand. From our experience, most teachers

can identify and describe tasks they use in their teaching. The second category "identify *sensor-logging and feedback*" is connected to the sensor-logging concept. It is about what sensors are logged during execution of tasks and what teachers want to see as feedback. Only what is selected for logging during task creation will be logged later when a student completes a task. When teachers state their needs of specific feedback, we can conclude which sensors would be required for that. That is why we combine the sensor logging and the feedback idea in this category. The third category "identify *triggers for tasks"* is important to the concept, since it determines the possibilities for personalization. Triggers are the core concept of dynamically appearing tasks, but they are hardest to identify. (Fig. 4).

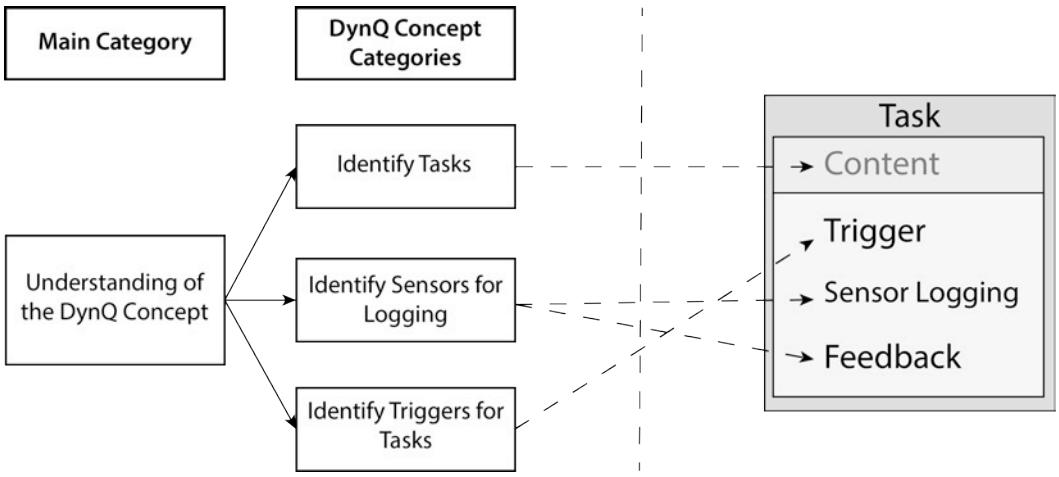

Figure 4. Deductive Qualitative Content Analysis categories. Modeled after [12].

4 RESULTS

The results of the questionnaire ("Do you make tasks spontaneously?") suggest that all six teachers agree that there are circumstances where tasks must be created spontaneously, or where they must be adapted to specific circumstances. Teachers could describe the situations in a free text field. We found that reasons for spontaneous tasks or the adaption of tasks include: students' skill level, weather changes, blockage of facilities ("when we cannot use the pool"), progress and assessment specific reasons, and available materials and resources. But it was also stated that teachers adapt tasks based on class discussions, where students express a need for certain tasks or adjusted group activities.

From the interview transcripts, we inductively found other important categories for the qualitative content analysis. The issue about *technology acceptance* and attitude towards technology is repeatedly addressed, making it an important category. From the diversity in teaching subjects from this group, we derived the category of *general application areas* for wearable and mobile teaching tools similar to DynQ. The complete figure of categories is given in Fig. 5.

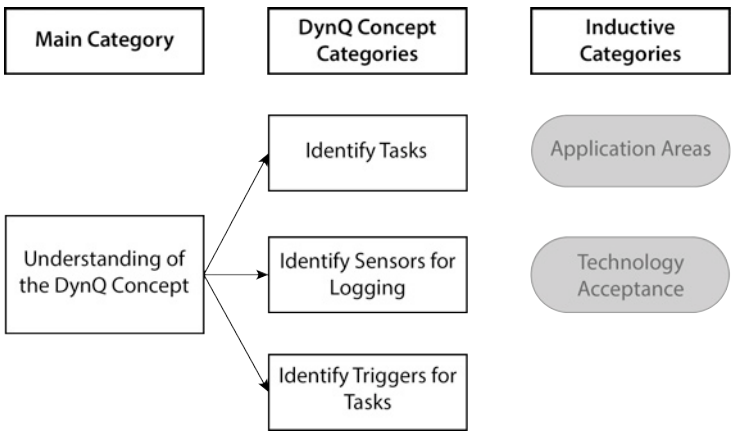

Figure 5. Deductive and inductive Qualitative Content Analysis categories. Modeled after [12].

4.1 Identification of Tasks

Tasks were mentioned on a general level, only few concrete sample tasks were given, but a general agreement that sports students need to exercise, train and conduct tasks was expressed. In aerobics, the teacher needs the students to design programs and to record videos for the teacher as feedback. It was mentioned, that "seeing and doing" was very central to their teaching approach as directly expressed by one teacher "for us, learning is more seeing and doing". Further on, it was specified "when I do a skill […] show students that this is the way it is supposed to be". Learning was described as "learning by doing" and "through repetition". The example of specific hand-movements in basketball was demonstrated. It was clear that tasks build on each other, and have a certain specific order or hierarchy "they can move on to the next level, or maybe they need to reduce […]". The teachers expressed the importance of being involved and active during the students' training process. They need "visuals" showing what a student is doing. It was indicated that a validation of the student is needed "like a selfie, it is showing the student, that the teacher knows" that the correct student really was doing the assignments. Clearly stated tasks related to sensor use and triggers in the discussion were:

- Running a certain distance/ way, with a certain speed or within a certain range of time
- Swimming with a certain stroke rate /frequency or speed
- Group running
- Activities on training stations
- Volleyball activities like: jumping, blocking, hitting the ball, reaction time

From these tasks, the following extra requirements for task design and used hardware can be derived:

- Video recording and sending as feedback to the teacher
- Underwater videos (swimming) and waterproof smart watch for logging
- Possibility for the teacher to attach a video/ picture to explain a skill
- Monitoring of multiple students exercising (e.g. running) without the teachers being co-located. The example of direct tracking of the students' progress including data syncing to the teacher's watch was mentioned.
- The distraction from pressing start and stop to begin and end a task must be minimized (especially during short tasks like fast swimming).
- Secure way of informing the teacher who is sending the data/ person validation and verification
- Rating of achievement and progress as a feedback for the teachers

4.2 Identification of Sensors for Logging

Even though our prototype is limited in terms of sensors, we kept the possibilities open to get a wide range of answers. Those answers can lead to new requirements, which could mean that a change in hardware would be needed for the stated application areas and sensor-logging needs. From the task discussions, the following interests in measurements were stated:

- Exhaustion, tiredness, panic, body functions
- Reaction time for jumps, blocking (volleyball), difference in reaction time over training time (hint to exhaustion)
- Monitoring the progress over longer time periods (e.g. 6 weeks within basketball)
- Measure lap count in swimming for distance
- Heart rate, step count, accelerometer (fitness, health)
- Stroke rate and frequency (swimming)
- Jumping height (basketball)
- Specific movements like throwing a ball and technique accuracy (basketball)
- Energy consumption over time (aerobics)
- Time (when are they performing the tasks and how long)

- Speed, distance, pace, acceleration, location tracking (running)
- Activity in general, to monitor if all students are doing the workouts
- Sense difference between running, or using a motorcycle, bus or equivalent

4.3 Identification of Triggers

The identification of possible sensor measurements to trigger tasks was a challenge, but most teachers could identify what they need their students to achieve before they can proceed with a certain advanced task. Interestingly, negative triggers were also mentioned, like “if the students fail to stay within a certain range”. Analyzing the conditions and dependencies they stated for the described tasks, we found the following possibilities for triggers:

- Previously completed tasks, moving on to a next level
- A certain number of activity repetitions, e.g. on a training station
- Task recommendation based on energy consumption
- Weight tracking for fitness and health related tasks
- Previously achieved running/ swimming distance within a certain amount of time (lap count for swimming)
- Timing, heart rate and reaction time to make recommendations for next tasks (volleyball)
- Achievement of a certain stroke rate, a particular speed using the correct technique (swimming)
- Staying within a particular speed range (running, swimming), stroke frequency range (swimming)
- Too fast movement, overdoing, extreme exhaustion as trigger for breaks and different tasks
- Immediate task adjustment or dynamic recommendations for long distance runners to keep or change the pace in certain locations

4.4 Application Areas

As mentioned before, stated teaching subjects within the field of sports education were sports science, sports sociology, exercise health and age, outdoor activities, sports pedagogy, swimming, motor learning, sports psychology, biomechanics of sports and exercise, strength and conditioning, sports coaching, practical aspects of sports, soccer, basketball, tennis, volleyball, aerobics, nutrition, growth and development were mentioned. We expected further discussions of concrete tasks in the stated teaching subjects. The use cases of running, swimming, basketball and volleyball got further recognition within the focus group discussion.

Regardless of the taught subject, most teachers indicated application areas for such a technology solution could be in the field of assessment and monitoring. For example, monitoring the students’ workout, checking on them if they are doing what they are supposed to do, but also checking on their progress. This includes the idea of minimizing cheating, where the teachers cannot check upon the students. The thought was not new. Teachers from Norway mentioned the problem of cheating or especially lazy students as well, however, not to the same extent as it was mentioned by the teacher group from Uganda. There was a clear difference between the concept idea that sensors can be used to trigger tasks for students automatically and the idea of the participating teachers to mainly use sensor logging to check the students work and progress. That gave us insight about possible requirements towards cheating detection and security issues while tracking the students progress.

4.5 Technology Acceptance

Participants engaged with the prototype from the start of the group discussion and discussed their own usage of smartwatches, showing an interest in the subject and the specific usage of wearable technology. Two of them clearly stated the integration of wearables (smartwatches) into their own training, coaching or research. Teachers stated a specific interest in innovative technology and any kind of technology out of the standard practice: “…if there is anything out of the ordinary, […] I could actually have an idea of what I can do”, “in which range the work(out) has been done, which types of fat were burned”, wondering “wouldn’t that require a chip in the blood?”. Obviously, the teachers were not only positive about the technology: “if it fails, it’s useless”.

Direct issues with the concept and the technology were expressed as follows.

- Unreliable internet connection, possibility of data loss
- Usage of two devices, placement of both and data loss
- Costs to provide and maintain gadgets
- General uncertainty about what to measure
- Mistrust of people and technology

Teachers clearly stated that they think students would misuse a system, if it is vulnerable. To fake results they think students would try to “shake” the device, “use a motorcycle” instead of moving themselves, “have somebody else doing [it]” (the task), as well as “record everything on the same day, even if they should work out continuously over multiple days”.

Overall, trust towards the technology within the following areas was mentioned:

- To sort data for the teachers, for example to help coping with large student group sizes, but also on an individual basis (much data from the same person)
- To measure tiny differences more reliably than humans, e.g., reaction time of volleyball players (jump, block)
- To enhance sports education and to make it more valuable
- To help teachers/ coaches to structure sports activities

Overall it was directly acknowledged, that the technology can be of use and support teachers and students, in particular in cases where the teacher cannot be around.

5 CONCLUSIONS AND FUTURE WORK

The participants of the focus group discussed use cases of a dynamic task application in various fields. Designed and tested with teachers mainly from a background in skiing and snowboarding, new requirements towards the system and concept were found this way. The participating teachers showed a surprisingly positive attitude towards mobile and wearable technology as well as high technology confidence. They had knowledge about sports watches and smartwatches as well as some sensor devices. In any case, the used technology has to fit the needs of the teacher in his/her specific teaching approach. Teachers from Uganda had a different perspective on application areas than we experienced with sports teachers from Norway. The general idea was to mainly use the sensor possibilities for monitoring and checking up on the students. As we found, that is mainly generated from the expectation of teachers to have cheating students. All in all, we could not analyze every category as deeply as we expected. We found that this was the case, not only because of concept understanding difficulties, but it was also influenced by the diversity of teachers (different subjects). Having many different subjects in the discussion combined with limited interview time where each participant’s input needs to be considered, limited the time for concrete discussions to go deeper into specific tasks and possibilities for sensor usage. Even though the teachers had tasks in mind and were able to express those, the concept of task triggering is difficult to grasp and must be explained in a better way. Affordances of the user interface have to match the idea of task dependencies from the teacher’s perspective and mental model. That means, task dependencies have to be visualized better for a consistent understanding, for example showing the hierarchy between tasks within the interface, what task follows what, and what has to be done prior to a specific task, which tasks are visible for all students and which tasks have to be discovered by the students. We could experience the transition from not knowing anything about the dynamic task approach to understanding the concept and how to make tasks based on the new concept. Although limited, teachers could identify what would be meaningful to log with sensors and how tasks could be triggered using information about the student’s context (using sensor measurements, GPS and time). From the focus group discussion, we found that further considerations for different subjects including non-sports subjects like nutrition, could be using the dynamic questing approach. Sports subjects are one example among various disciplines that employ teaching approaches using tasks. Future work could include further design and development of DynQ to meet teachers’ requirements with a focus on specific application areas.

REFERENCES

[1] R. Schulz, G. M. Isabwe, & F. Reichert, “Investigating teachers’ motivation to use ICT tools in higher education,” Internet Technologies and Applications (ITA), pp. 62-67, 2015.

[2] R. Schulz, G. M. N. Isabwe, & A. Prinz, “Development of a task-driven mobile teaching tool for enhancing teachers’ motivation”. Proceedings of the 8th International Conference on Computer Supported Education, 251-258, 2016.

[3] A. C. Borthwick, C. L. Anderson, E. S. Finsness, & T. S. Foulger, “Special Article Personal Wearable Technologies in Education: Value or Villain?” Journal of Digital Learning in Teacher Education, vol. 31, no. 3, pp. 85-92, 2015.

[4] M. Bower, & D. Sturman, “What are the educational affordances of wearable technologies?” Computers & Education, vol. 88, pp. 343-353, 2015.

[5] V. Venkatesh, M. G. Morris, G. B. Davis, & F. D. Davis, “User acceptance of information technology: Toward a unified view,” *MIS quarterly*, pp. 425-478, 2003.

[6] ISO 9241-210: 2010. Ergonomics of human system interaction - Part 210: Human-centred design for interactive systems. International Standardization Organization (ISO). Switzerland, 2010.

[7] F. Wang, & M. J. Hannafin, “Design-based research and technology-enhanced learning environments,” Educational technology research and development, vol. 53, no. 4, pp. 5-23, 2005.

[8] C. H. Tu, L. E. Sujo-Montes, & C. J. Yen, “Gamification for learning,” *Media rich instruction,* pp. 203-217, Springer International Publishing, 2015.

[9] J. Kitzinger, “The methodology of focus groups: the importance of interaction between research participants,” *Sociology of health & illness*, vol. *16, no.* 1, pp. 103-121, 1994.

[10] M. Kuniavsky, “User experience and HCI. *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications”, 2nd Edition. Lawrence Erlbaum Associates Inc, New York, USA*, 2007.

[11] H. F. Hsieh, & S. E. Shannon, “Three approaches to qualitative content analysis,” *Qualitative health research*, vol. *15*, no. 9, pp. 1277-1288, 2005.

[12] S. Elo, & H. Kyngäs, “The qualitative content analysis process,” *Journal of advanced nursing*, vol. *62, no.* 1, pp. 107-115, 2008.